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ORIGINAL ARTICLES

MEDICAL SERVICE IN INDUSTRY*

By DONALD HUNTER, M.D. Lond., F.R.C.P. Lond.
PHYSICIAN TO THE LONDON HOSPITAL

INDUSTRIAL medicine is the practice of medical supervision, preventive medicine and public health within the confines of an industry. Its aim is to safeguard the health of the employee and to minimise time lost from work because of sickness or accidents. Though one of its functions is treatment it is mainly an advisory and preventive service. The industrial medical officer has to coöperate with managers, workers, engineers, chemists, and architects. He has to discover faults in the working environment and try to find remedies. One of his most interesting duties is to bring into the effective service of industry the discoveries of the research worker.

IDENTIFICATION OF IRRITANT SUBSTANCES

Investigations are being made to discover which constituents of substances handled in industry actually cause dermatitis. Limonene, for example, has been found to be the irritant in oranges, lemons and celery; since this substance is a terpene the affections produced are comparable to turpentine dermatitis (Horner 1931).

The ætiology of so-called aniline tumours of the bladder is almost solved. It has been known for 45 years that workers employed in the manufacture of synthetic dyes sometimes suffer from tumours of the bladder. The usual period of exposure is about 12 years, but tumours have developed in men who had been working in the dye industry from 4 to 27 years. The patient first seeks advice because of hæmaturia, and cystoscopy reveals a papilloma, sometimes benign, sometimes malignant. The manufacture of synthetic dyes involves the use and production of many chemical substances. The following compounds have been accused of attacking the bladder: aniline, *p*-toluidine, xylidines, naphthylamines, fuchsin, benzidine, and rosaniline. The choice of the name "aniline cancer" is unfortunate, because it conveys the impression that aniline is the poison responsible for the condition. In the dye industry it is common to have two distinct processes going on in the same room; and in the case of a disease with a long latent period like this the workman may have changed from one factory to another, or from one department in the same factory to another, during the period of exposure, and each change will have brought new compounds under suspicion. Lastly the same compounds may be attended with different degrees of danger when used in different processes. Thus, in making benzidine there may be more actual exposure to aniline vapour than in the manufacture of aniline itself.

Hueper, Wiley, and Wolfe (1938) succeeded in producing papillomatosis of the bladder in female dogs by daily subcutaneous and oral treatment with *p*-naphthylamine (from 300 to 450 mg. daily in capsules) for 32 months. The lesions they observed in cystoscopic and histological examinations of the bladders of twelve of the sixteen dogs thus treated were identical with those they had seen in cystoscopic and histological examinations of dye workers. The tumours continued to grow and to become more numerous in some of the dogs after the treatment had been discontinued.

DANGERS FROM CHANGES OF PROCESS

Some time ago two men were admitted to my ward suffering from hæmoglobinuria and hæmolytic jaundice with anæmia (Bomford and Hunter 1932). They had been employed in the process of tin-refining and had watered down a dross containing aluminium arsenide while it was still hot. The works manager was ignorant of the fact that water acts on metallic arsenides causing the evolution of arseniuretted hydrogen, though this had been recognised 25 years before. The first essential in the prevention of this form of toxic accident in industry is that all concerned, particularly works medical officers and works managers, should be fully alive to the dangers of the processes involved, and to the signs of early and slight cases of poisoning which may result from them. Consideration of business interests should never prevent factory doctors from publishing full accounts of such accidents in the medical journals. Failure to do so may cause unnecessary danger to the lives of the workers.

In 1934 Barber recorded the deaths of five men from exposure to diethylene dioxide in the manufacture of artificial silk. The process on which they were employed had been in use for a considerable time, but for 4–5 weeks before they became ill exposure to the vapour was intensified by the speeding up of work on one machine. All the men who died worked on this machine. Diethylene dioxide is not highly volatile under ordinary conditions, but here the men in the course of their duties had to put their heads into the vat containing the noxious substance. The premonitory symptoms were nausea, vomiting and abdominal pain. In two cases an abdominal emergency was diagnosed. From about the third day of the illness the urine was scanty, and in one case it was found to contain blood and albumin. The symptoms of renal insufficiency with suppression of urine were predominant after the first few days and death occurred in about a week. In one case the blood-urea reached 346 mg. per 100 c.cm. In the four cases submitted to autopsy hæmorrhagic nephritis was found, associated with areas of necrosis in the kidneys; three showed necrosis of the liver without bile staining or fatty change. Absorption evidently occurred by inhalation, and the severity of the changes in the kidneys suggests that death was due to the great increase of the dose when the process was intensified.

CHEMICAL CONSTITUTION AND PHYSIOLOGICAL ACTION

The metallic poisons have entirely different effects depending on whether they exist in organic or inorganic form, whether their physical properties are those of a solid, a liquid or a gas, whether the valency of the metal radicle is high or low, and whether they fall upon the skin or enter the body through the respiratory or alimentary tracts. Industrial arsenic poisoning occurs in two forms, the first from inhalation of or contact with the dusts of compounds of arsenic, and the second from inhalation of arseniuretted hydrogen. The symptoms in the two groups bear little or no resemblance to one another. The compounds of arsenic act as local irritants to the skin and mucous membranes, giving rise to dermatitis, papilloma and even carcinoma of the skin, conjunctivitis, coryza, laryngitis and even perforation of the nasal septum. Polyneuritis does not arise, and only rarely is the dose of arsenic large enough to produce the gastro-enteritis so common in the criminal administration of arsenic. Arseniuretted hydrogen, on the other hand, acts as a powerful hæmolytic agent, causing hæmoglobinuria, anæmia and hæmolytic jaundice. The well-known symptoms of poisoning by inorganic compounds of lead are entirely absent in men poisoned by tetra-ethyl lead. This is an organic, lipoid-soluble compound and is absorbed directly through the skin. It gives rise to restlessness, talkativeness, ataxia, insomnia, delusions and mania, but not to wrist-drop, colic, or anæmia.

Men poisoned by organic derivatives of mercury do not show the clinical symptoms of poisoning by the metal itself, namely, salivation, stomatitis and erethism. In 1937, four men were admitted to my ward showing symptoms and signs of a unique disease of the nervous system; there were severe generalised ataxia, dysarthria and gross constriction of the visual fields; memory and intelligence were unaffected (Hunter, Bomford and Russell 1940). They had been employed in the manufacture of methyl mercury iodide for use in agriculture as a fungicidal dust in the prevention of certain smut diseases of cereals. The precautions used in the factory against inhalation of dusts and vapours were inadequate. The selective effect of the poison on certain parts of the nervous system was confirmed by experiments in which rats and a monkey were exposed to the vapour of methyl mercury iodide. This caused an intense and widespread

* Introductory lecture to a course on industrial medicine and hygiene for works officers, delivered on Nov. 11, 1940.

degeneration of some of the sensory paths of the nervous system, the peripheral nerves and posterior spinal roots being affected first and the dorsal columns of the spinal cord and some of the neurones in the middle lobe of the cerebellum later. In the manufacture of organic mercury compounds adequate precautions must be taken to ensure that dusts and vapours do not come in contact with the skin and are not inhaled. The use of gloves and respirators is inadequate as a means of protection; the whole process of manufacture, including the final packing of the dust, should be carried out mechanically in enclosed apparatus.

It is sometimes possible to predict from the chemical composition of the simpler members of the coal-tar group what their physiological action is likely to be. Addition to the benzene ring of a nitro group usually produces a more toxic compound. But it does not follow that toxicity will continue to increase as more nitro groups are added. Thus, 1-2-4 dinitrophenol is toxic, whereas trinitrophenol is practically harmless. The position of the substituent groups in the benzene ring has a great effect on the toxic action. Thus the toxic properties of 1-2-4 dinitrophenol are not shared by any of the other isomers. When a nitro-compound is reduced to an amine (as when nitro-benzene is reduced to aniline) the toxic characteristics remain much the same, but the intensity of the action is lessened. The entrance of chlorine into an aromatic compound does not increase the toxicity as it does in the case of an aliphatic compound. In fact, chlorbenzene is less toxic than benzene. The chlorinated hydrocarbons have flooded the market in the last 20 years, largely because the alkali industry requires an outlet for chlorine. The various members of the group are useful as refrigerants, degreasers of metals, cleansers of textiles and solvents for rubber. They owe their usefulness largely to the fact that they are non-inflammable and non-explosive. Under some circumstances they may be harmful, causing toxic jaundice and suppression of urine.

RESEARCH STILL TO BE DONE

Many diseases of occupational origin remained unknown for years, notable instances being asbestosis and Weil's disease, and the real nature of some has seemed obvious enough once attention has been drawn to it. In 1891 Mr. Alfred Greenwood, the partially blind secretary of the glass bottle makers of Yorkshire United Trade Protection Society, began to notice how often cataract was the cause of incapacity which brought members on the superannuation funds. In glass-bottle making the finisher is exposed for 5 hours or more each week to the glare and fierce heat from the glory hole of a furnace of molten glass at a temperature of about 1500° C. Since the work of Robinson (1907) in Sunderland it has been known that 10% of these men suffer from cataract. Proof of the industrial origin lies in the fact that it begins in the optical centre of the eye, at the posterior pole of the lens, and involves the cortex; ordinary senile cataract develops usually in the form of radii from the periphery of the lens. Similar posterior cortical cataracts have since been found in tinplate and sheet mill-men, in iron puddlers and in chain makers.

In 1906 the late Dr. S. R. Wilson, when house-surgeon to the Royal Infirmary, Manchester, noticed that the patients admitted for cancer of the scrotum were not chimney-sweeps but mule-spinners. So struck was he by the fact that in 1910 he wrote an essay on the subject. This was submitted for a scholarship, but was only published 12 years later (Southam and Wilson 1922).

There must be other diseases still eluding our search. New processes are constantly springing up; in some countries new solvents for quick-drying paints and varnishes have been allowed to poison men when they should have been first tested on experimental animals. Up to 1933 the coöperation of geologists in attacking the problem of pneumonokoniosis had not been sought. The petrological microscope rapidly incriminated silicates such as sericite and sillimanite, whereas previously silica had been held solely responsible. Recently fluorosis of bones, a new disease of industry, was recognised. Is this condition widespread among cryolite-crushers elsewhere than in Denmark? Do bath-enamellers suffer from it? What, if any, will be the ultimate consequences to bon and bone-marrow of the deposition of calcium fluoride in the skeleton? Some of the children born to women cryolite-crushers have fluorosis of the teeth. Is this the sole disability transmitted to the second generation?

Is the high death-rate from lung disease in sheep-dip workers accounted for by arsenic cancer of the lung? Is the high incidence of malignant disease of the nasal sinuses in workers in nickel related to substances used in their work, and is there also a high incidence of lung carcinoma among them? Will the chemist find a suitable substitute for acid nitrate of mercury in the felting of fur? Will the bacteriologist succeed in producing effective inoculation against Weil's disease? What is to be done about Raynaud's phenomenon, produced by the use of vibrating tools, including pneumatic drills, rams, chisels, and riveting machines? These and many other problems await solution.

PROFESSOR AND MEDICAL OFFICER IN INDUSTRY

Professorial chairs in industrial medicine and centres for postgraduate training should be established in the universities in the larger industrial areas. The professor should hold a full-time appointment on the medical staff of a teaching hospital and should have charge of beds and outpatients as part of his special department. His salary must come from the university and not from commercial firms. He should have full powers to inquire into industrial conditions and the same right to visit factories and workshops as H.M. medical inspectors of factories. His equipment must include research grants, pathological and chemical laboratories, animal houses, and a library. He would investigate all suspected cases of industrial poisoning either admitted direct to his wards or referred to him by common consent. His contact with industrial medical officers in his district as well as with the Factory Department of the Home Office would ensure for him adequate clinical material. He would conduct researches in his wards and laboratories on the toxicity of the numerous chemical substances introduced into industry. Whenever a new chemical substance is on general principles suspect, it must be tested first on experimental animals and not on the workman. It is not sufficient for this work to be left in a vague sort of way to the Government chemist or the Medical Research Council. In his work the professor of industrial medicine would reap the advantages of immediate contact with experimental pathologists, morbid anatomists, pharmacologists, chemists, physiologists, physicists and engineers in the corresponding university departments, as well as with his medical and surgical colleagues. He would take an active interest in the treatment of injuries sustained in factories, as well as helping to educate doctors in their treatment, and in an appreciation of the physical capacity required for various forms of work (Griffiths 1940). Lastly, he would help to make the industrialist understand the risks to which his men are exposed, and that the guiding principle of low costs and large profits retards progress.

Since such chairs cannot be instituted at once facilities should be provided at the earliest date for training industrial medical officers on a regional basis. It is important that they should have the special knowledge which will enable them to advise the employer on the best means of carrying on his industry safely. At present, with a few exceptions, only the medical inspectors of factories have this knowledge. The Association of Industrial Medical Officers is willing to collaborate in arranging practical training in established factory medical departments. The works doctor should not despise any possible source of information; nurse, charity worker, undertaker, priest, pharmacist, trade-union official and the workman himself may make statements which can be followed up with important results. He should have an aptitude for administration though in the factory he is best employed in an advisory, not an executive, capacity. He should be responsible to the managing director, and not to any other official of the company, such as the labour manager. He should take charge of all first-aid, medical and nursing services. He should have had considerable experience in clinical work and should have held resident hospital appointments; he should know something of social problems and should be able to undertake original research in medicine. He must not expect the diseases which he

meets in the factory to be identical with those of ordinary civil life. He should hold one of the higher qualifications in medicine such as M.D. or M.R.C.P., because his work demands the mind of a physician rather than that of a surgeon or a public-health official.

Apart from technological problems, how can the factory medical officer best equip himself to deal adequately with the impact of industrial problems on society at large? The answer is that he should never allow his special technical knowledge to assume greater importance than his knowledge of doctoring in general. He should strive to be a good doctor in the broadest sense of the term, to preserve contacts with academic medicine, to cultivate interests outside his profession, and to follow his various activities with a constant regard for social values.

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A WARTIME PHARMACOPŒIA

BY M. H. PAPPWORTH, M.D. Lpool, M.R.C.P.
MEDICAL OFFICER AT CUMBERLAND HOUSE, SURREY C.C.

AT present drugs are being used, regardless of difficulties in replenishing stocks. We heed not the morrow. Most doctors appear to be unaware of the supply problems with which the chemical firms will be faced in the near future. Some drugs will be difficult to obtain because they normally come from parts of the world to which we have not ready access at present—for example, potassium salts, squills and liquorice. Every drug that is imported means the use of valuable shipping space, and many substances in common use, such as balsam of tolu, buchu, cubebs and senega, could be avoided in our prescriptions without great loss. Moreover, many medicinal substances are needed for the manufacture of war weapons and as lubricants; these include aluminium and magnesium salts, glycerin, liquid paraffin and castor oil. The list of substances covered by these three categories is enormous. But it is imperative that their use should be restricted and by helping in this way doctors will make a valuable contribution to our war effort.

Now is the time for each hospital or hospital-group to compile a wartime pharmacopœia which will pay due regard to these considerations. The following formulæ and comments may prove useful to anybody engaged in this task. The main aims have been to avoid drugs within the three categories described above; to remember the cost of ingredients; and to combine simplicity with maximum therapeutic efficacy.

Bromide mixture

℞ Sodii bromidum	.. ..	gr. 20
Liquor arsenicalis	.. ..	♏ 3
Aqua chloroformi ad	.. .. ..	ʒ ½

Potassium bromide is manufactured from potassium carbonate, and so are the acetate, citrate and bicarbonate. Potassium carbonate came from Germany. There are deposits in America, but the difficulty of shipment must be considered. Therefore, whenever possible potassium salts should be replaced by the corresponding sodium salt.

Carminative mixture

℞ Sodii bicarbonas	.. ..	gr. 10
Tinctura cardamomi composita	.. ..	♏ 30
Liquor ammoniæ aromaticus (B.P.C.)	..	♏ 30
Aqua chloroformi ad	.. .. ..	ʒ ½

Although supplies of most volatile oils, which are our main carminatives, are becoming scarce, there appear to be ample stocks of cardamoms.

Rapid carminative mixture

℞ Spiritus ætheris	.. ..	♏ 30
Acidum sulphuricum aromaticum (B.P.C.)		♏ 10
Aqua menthæ piperitæ destillata ad	..	ʒ ½

The commonly used spiritus ætheris compositus (B.P.C.) is almost unobtainable.

Colchicum mixture

℞ Extractum colchici liquidum	.. ..	♏ 5
Sodii bicarbonas	.. ..	gr. 10
Sodii salicylas	.. ..	gr. 10
Aqua menthæ piperitæ destillata ad	..	ʒ ½

Almost all the colchicum used for medicinal purposes was imported from central and south Europe. The plant grows well in parts of this country, but until it is cultivated here on a commercial scale colchicum should be reserved for cases of acute gout.

Antacid mixture

℞ Kaolinum	.. ..	gr. 15
Sodii bicarbonas	.. ..	gr. 30
Calcii carbonas	.. ..	gr. 20
Aqua chloroformi ad	.. .. ..	ʒ ½

Bismuth salts are expensive and are used needlessly and wastefully. During the war it seems unjustifiable to use bismuth preparations except in the treatment of syphilis, but the compilation of antacid mixtures and powders for a wartime pharmacopœia is beset with great difficulties. Bismuth salts, magnesium triple phosphate and magnesium and aluminium silicates have become popular, but magnesium and aluminium salts are needed for aeroplane manufacture. Kaolin, sodium bicarbonate, calcium carbonate and triple phosphate are the only commonly used antacids freely available.

Saline purgative mixture

A favourite prescription is a mixture of magnesium sulphate and magnesium carbonate, usually called mistura alba. But magnesium is essential for alloys for aircraft and supplies must be conserved. The sulphate can be replaced by the sodium salt, but there is no substitute for the carbonate which will allow the mixture to retain its physical characteristics. Mistura alba should not appear in a wartime pharmacopœia. Glauber should replace epsom as a saline purgative.

Expectorant mixture

℞ Ammonii carbonas	.. .. ..	gr. 3
Ammonii chloridum	.. .. ..	gr. 10
Emulsio chloroformi (B.P.C.)	.. ..	♏ 10
Aqua ad	.. ..	ʒ ½

Ipecacuanha is a favourite ingredient of expectorant cough mixtures, but supplies are difficult to obtain and it should be reserved for its active principle, emetine, specific in amœbic dysentery. The saponins squill and senega are also commonly used; squill is at present unobtainable and must be excluded; senega comes from Canada and the United States. Some chemical firms report a shortage, but others appear to have fair stocks. Perhaps ♏ 10 of infusum senegæ concentratum could be added to the mixture, but it is probably equally effective without, and many doubt the therapeutic value of the saponins as expectorants.

Sedative cough mixture

℞ Diamorphinæ hydrochloridum	.. ..	gr. 1/6
Tinctura chloroformi et morphinæ (B.P.C.)		♏ 5
Liquor atropinæ sulphatis (B.P.C.)	..	♏ 1
Aqua menthæ piperitæ destillata ad	..	ʒ ½

It is important to conserve our supplies of animal and vegetable oils and fats. Glycerin, which is commonly used as a demulcent in sedative cough mixtures, is manufactured from these and is used in the preparation of cordite. Its use internally should be discontinued. Tinctura chloroformi et morphinæ should be used instead of the tinctura chloroformi et morphinæ composita, because the latter contains 5 oz. of glycerin to the pint. The use of syrups as flavouring agents is indefensible during wartime.

Rhubarb and soda mixture

℞ Pulvis rhei	.. ..	gr. 5
Sodii bicarbonas	.. ..	gr. 10
Ammonii carbonas	.. .. ..	gr. 2
Aqua menthæ piperitæ destillata ad	..	ʒ ½

Syrupus zingiberis often added to this mixture should

not be used. This applies to all such syrups. The popular gentian preparations are unobtainable.

Diuretic mixture for alkalinising urine

℞ Sodii citratis	.. ..	gr. 30
Sodii bicarbonis	.. ..	gr. 30
Aqua chloroformi ad	.. .. ..	ʒ ½

Sodium citrate must be used instead of the more usual potassium citrate. The useful diuretic theobromina et sodii salicylas cannot be added to this mixture since it is incompatible with sodium bicarbonate.

Diuretic mixture for acidifying urine

℞ Ammonii chloridum	.. .. ..	gr. 30
Aqua chloroformi ad	.. .. ..	ʒ ½

This is a simple but efficacious mixture.

Mixture for diarrhœa

℞ Tinctura chloroformi et morphinæ (B.P.C.)	♏ 10
Extractum belladonnæ liquidum	♏ 1
Mistura cretæ (B.P.C.) ad	ʒ ½

The standard drugs used in the treatment of diarrhœa are catechu, kino and krameria, but these have become increasingly difficult to obtain. Kino eucalypti is indigenous to Australia, but, apart from the difficulty of shipment, is very expensive, costing over £1 a pound. Mistura cretæ composita (B.P.C.) should not be prescribed instead of the simpler mixture, because it contains ♏ 30 of tinctura catechu per ounce. Tinctura chloroformi et morphinæ composita should not be used for the reason stated previously. Objection may be raised to the use of even the simpler tinctura chloroformi et morphinæ because of its content of extractum glycyrrhizæ liquidum, this being scarce. In many pharmacopœias liquorice is a favourite flavouring agent for many mixtures (e.g. in the National Health Insurance formulary), but because we relied on imports from Sicily, Spain, and Syria stocks are low and not likely to be easily replaced. In this mixture the tinctura chloroformi et morphinæ could be replaced by tinctura opii ♏ 7½.

Tonic mixture

℞ Ferri et ammonii citras	.. .. ..	gr. 10
Extractum nucis vomicæ liquidum	..	♏ 2
Infusum quassiæ recens ad	.. ..	ʒ ½

Chemists report adequate stocks of quassia; on the other hand, gentian is unobtainable.

Hæmatinic mixture

℞ Ferri et ammonii citras	.. .. ..	gr. 30
Emulsio chloroformi (B.P.C.)	.. ..	♏ 10
Aqua ad	.. ..	ʒ ½

Glycerin and syrups commonly used to flavour this mixture should not be prescribed.

Diaphoretic mixture

℞ Liquor ammonii acetatis diiutis	ʒ 2
Spiritus ætheris nitrosi	♏ 30
Sodii citratis	gr. 15
Aqua chloroformi ad	ʒ ½

Anti-syphilitic mixture

℞ Sodii iodidum	.. ..	gr. 10
Liquor hydrargyri perchloridi	.. ..	♏ 30
Aqua chloroformi ad	.. .. ..	ʒ ½

The more usually used potassium salt is replaced by the sodium. Iodides are unfortunately too often the resort of the therapeutically destitute. For the duration of the war, at least, iodide medication internally should be reserved for syphilitic patients.

Analgesic mixture

℞ Phenacetinum	} āā	gr. 7½
Acidum acetylsalicylicum ..		
Pulvis tragacanthæ compositus ..		
Aqua menthæ piperitæ destillata ad	..	ʒ ½

Salicylate mixture

℞ Sodii salicylas	.. ..	gr. 20
Sodii bicarbonas	.. ..	gr. 20
Aqua chloroformi ad	.. .. ..	ʒ ½

Chloral draught

℞ Chloralis hydras	.. ..	gr. 10
Sodii bromidum	.. ..	gr. 20
Aqua chloroformi ad	.. .. ..	ʒ ½

Paraldehyde draught

℞ Paraldehydum	.. ..	ʒ 2
Extractum quillaiæ liquidum (B.P.C.)	..	♏ 10
Aqua cinnamomi destillata ad	.. ..	ʒ ½

This is fairly successful in disguising in large measure the horrid smell and flavour of a very useful hypnotic.

I wish to thank the laboratory directors of several large chemical manufacturers for information about stocks and suggestions with regard to prescriptions.

PARAFFINOMA OF THE PERITONEUM

By Alan H. Cruickshank, M.B. Aberd.
ASSISTANT IN PATHOLOGY IN THE UNIVERSITY OF ABERDEEN

Early in the present century surgeons used injections of paraffin wax of low melting-point to correct disfigurements of the face or other parts of the body. The results appeared to be satisfactory at first, but the correction of the deformities was not permanent and unfortunate accidents occurred as result of emboli. Wax of higher melting-point failed to produce any better results, and in many of the cases surgical removal of the injected paraffin became necessary. The tissues showed a tendency to remove the wax from the site where it had been injected, and the wax caused a chronic inflammatory process of the tissues in contact with it, and a tumour resulted. This tumour was first called a paraffinoma by Benedek in 1913, and has a characteristic histological appearance.

Numerous examples of this type of tumour have been recorded as the result of the accidental or deliberate introduction into the tissues of mineral oils, such as paraffin wax, liquid paraffin or soft paraffin. Publications on the subject have been reviewed by Krohn (1930) and Jaerisch (1934), the latter recording 126 articles which have appeared since 1918. Vegetable oils do not cause this reaction, as has been shown experimentally by Weidman and Jefferies (1923). The tumour resulting from paraffin injections is a granuloma rather than a true neoplasm, and liquid paraffin is not carcinogenic (Wood 1929), although carcinoma occurring in breasts into which paraffin had been injected for cosmetic purposes is recorded by Krohn (1930).

Paraffin wax had also been injected for purposes other than purely cosmetic ones. It was used in the treatment of hernia and piles, and in ear, nose and throat surgery. The unfortunate results following its injection for the cure of hernia are recorded by Whittaker (1936) and Ragan (1938), and stenosis of the rectum following paraffin injections for the cure of hæmorrhoids is described by Bazin (1929). The use of paraffin and mineral oils as a vehicle for substances to be injected subcutaneously has caused paraffinomas, as in the cases reported by Bolam (1935), Bazin (1929), Martini (1936) and Jaerisch (1934). Paraffinomas also developed after the induction of oleothorax in the treatment of diseases of the lungs (Livieratos 1936). The production of artificial tumours by paraffin injections in order to avoid military service has become known since the last war; most of these tumours were induced in Italian subjects (Murard 1934, Flandin, Poumeau and Israël 1935, Johnson 1937), although this device also seems to have been used in Russia, for an artificial tumour of this type is reported by Heyerdale and Mader (1940) in a Russian who succeeded in avoiding conscription by this method.

It seems that tumours, at least tumours requiring surgical treatment, do not invariably result from injections of paraffin, and in the recorded cases the time required for the formation of the tumour has varied from a few weeks to many years. This variation may be due to the different types of paraffin or to different degrees of purity, but it has been suggested that the factor determining the formation of the tumour is sensitivity of the patient's tissues to the wax and that the reaction is an allergic one. Even liquid paraffin taken by mouth as a laxative may apparently produce a paraffinoma, for a paraffinoma of the appendix is described by Jaffé (1934) in a woman who presented herself with symptoms of chronic appendicitis and who

FIG. 1—Tumour mass in mesentery.

had been in the habit of taking liquid paraffin when she was constipated.

The effect of liquid paraffin in the lungs is to cause a reaction essentially similar to that caused in the subcutaneous tissues, and cases of this type have resulted from the accidental inhalation of liquid paraffin administered by mouth for long periods to debilitated adults or to children. Administration of medicaments suspended in liquid paraffin to the respiratory passages over long periods has the same effect. The pulmonary condition has been induced experimentally in rabbits by Laughlen

FIG. 2—Peritoneal aspect of right side of diaphragm, showing nodules.

(1925), and the literature on this subject up to 1937 has been reviewed by Ikeda (1937); since then cases have been reported by Young and Applebaum (1939), Pinkerton and Moragues (1940), and Freiman, Engelberg and Merrit (1940).

At one stage of its development, or rather of its regression, as a therapeutic agent, liquid paraffin was used, presumably because of its lubricant action, in attempts to prevent peritoneal adhesions. There seem to be no published records of its effect in the human peritoneal cavity, although its effect has been studied in animals by Tantini (1935), and it is for that reason that the following case is described.

CASE-RECORD

A man aged 45 had had an operation for gall-stones in 1920 and subsequently had developed peritoneal adhesions. He was operated on for intestinal obstruction on Sept. 2, 1937, and again on Dec. 7, 1937. On the latter occasion half a pint of liquid paraffin was poured into the abdomen in the hope that it might prevent further adhesions. On Aug. 5, 1940, he again developed intestinal obstruction and was operated on in the Aberdeen Royal Infirmary. The loops of the small intestine were found to be matted together by very thick and dense fibrous adhesions, and the bowel and the mesentery were studded with small greyish-yellow raised nodules which looked like tubercles. A number of white bodies like haricot beans were lying free in the peritoneal cavity; these were removed and one was sent for pathological examination. Some of the adhesions were divided and the abdomen was closed. Prof. J. S. Young reported that the specimen sent for examination consisted of cellular granulation tissue with many foreign-body giant cells, and that there were no signs of tuberculosis or malignant growth. After the operation the patient was very restless. Morphine and rectal salines were administered, but his condition became steadily worse and he died on Aug. 7.

Post-mortem examination was carried out 6½ hours after death. The peritoneal cavity contained 5 oz. of fluid blood. Numerous white nodules up to 1 cm. in diameter were scattered over the serous coat of the small intestine, and dense adhesions bound all the loops of the small intestine together and to the colon and bladder. The mesentery contained tumour-like nodules of varying sizes forming a mass 10 cm. × 7 cm. (fig. 1). The nodules were cystic and contained oily

FIG. 3—Mass on peritoneal aspect of left side of diaphragm.

material. The peritoneal aspect of the diaphragm was studded with tumour masses which also were cystic (fig. 2). The largest of these nodules was on the left side and formed a mass 6 cm. in diameter on the peritoneal aspect of the dome of the diaphragm (fig. 3). It was adherent to the fundus of the stomach but did not invade its wall. The capsule of the spleen was greatly thickened but was not nodular. The splenic pulp was congested and the malpighian bodies were indistinct. There was perihepatitis with adhesions to the diaphragm and to the surrounding viscera, and over the left lobe of the liver there were a few small nodules. There was no naked-eye abnormality of the substance of the liver. The gall-bladder was distended with bile and contained a solitary calculus, measuring 3 cm. × 2 cm. × 2 cm. of the cholesterol type. Slight deposition of cholesterol was present in the mucous membrane. There was a scar at the fundus of the gall-bladder where it had been drained. The appendix was absent. The prostate showed slight nodular hypertrophy of its lateral lobes. The lungs were œdematous and congested. There was fat flecking of the intima throughout the aorta. No other gross lesion was found in any of the organs.

At first it was thought that the nodules and masses in the peritoneal cavity were secondary carcinomatous growths which had undergone degeneration to cause the cystic spaces, and the prostate gland, because of its

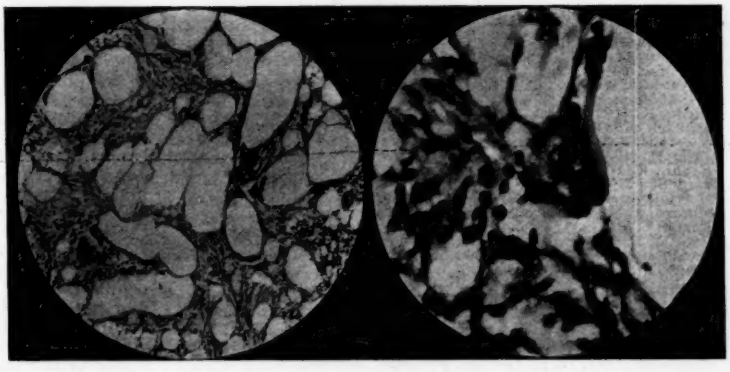

FIG. 4—Left, low-power view of tumour (× 50), showing cystic spaces and two giant cells. Right, high-power view (× 150), showing edge of a cystic space with a giant cell.

nodularity, seemed to be a possible site for a primary growth. On microscopic examination of the prostate, however, no sign of malignant growth was found, although there was well-marked hypertrophy of its glandular elements. The epithelial hyperplasia was of an irregular papillary type with hyperchromatism of some of the nuclei, but there was no evidence of invasive growth.

Histologically the tumour-like nodules of the peritoneum and mesentery consisted of cavities surrounded by an inner zone of dense fibrous tissue and an outer zone of cellular granulation tissue which included numerous foreign-body giant cells (fig. 4). These giant cells were distributed in relation to the smaller cavities which had been occupied by globules of paraffin. In frozen sections these globules stained with Sudan III, being browner than neutral fat. The structure of the tumour was typical of the paraffinomas described in the literature.

DISCUSSION

In this case the findings were similar to those in the experiments of Tantini (1935), who made repeated intraperitoneal injections of mineral oils into guineapigs over a period of some months and produced hyperplastic changes in the connective tissue and lining cells of the peritoneum with the formation of nodules, some of which were pedunculated or even free in the peritoneum. Tantini found that much of the oil injected into the peritoneal cavity reached the liver. In this case the liver was not kept for examination because its substance showed no naked-eye abnormality and because the true nature of the peritoneal nodules was not recognised during the autopsy. The animals in Tantini's experiments showed considerable variation in the degree of response which resulted from the injections and the variability of human patients in their response to the mineral oil has already been commented on. The case described confirms Tantini's experimental results and demonstrates clearly that liquid paraffin is not only of no value in the prevention of intestinal adhesions but tends to favour their formation, and that a giant-cell granuloma is apt to form in the peritoneal cavity as a result of its presence.

SUMMARY

Paraffin wax, soft paraffin or liquid paraffin may produce a chronic inflammatory reaction if injected subcutaneously or introduced into the lungs, resulting in granulomatous tumours called paraffinomas. Similar tumours have been produced in animals by intraperitoneal injection of liquid paraffin.

A man developed intestinal obstruction due to adhesions, and at operation half a pint of liquid paraffin was left in the peritoneal cavity in the hope of preventing further adhesions. Three years later he was again obstructed; his intestines were found to be densely matted together by adhesions and multiple paraffinomas were found on the peritoneum and mesentery and lying free in the peritoneal cavity.

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The following appointments have been made in the Ministry of Health: Mr. H. H. George, principal assistant secretary for finance and accountant general; Mr. S. F. S. Hearder, principal assistant secretary; and Mr. H. Symon, assistant secretary.

A SPECIES OF MOSQUITO INFESTING DEEP SHELTERS IN LONDON

By P. G. Shute, F.R.E.S.

ASSISTANT MALARIA OFFICER (MINISTRY OF HEALTH), HORTON HOSPITAL, EPSOM

Of the 3,000 species of mosquitoes known to occur in various parts of the world 29 are found in the British Isles. Four of our indigenous species pass the winter in the egg stage; five as both eggs and larvæ; seven as larvæ and seven as fertilised females which have developed an adipose body preceding hibernation. Generally speaking, hibernation begins at the end of the summer and temperature is the governing factor. Hibernation in certain species can be prevented by keeping them under summer conditions—i.e. a temperature exceeding 60° F. and, in some cases, with artificial light in addition.

The chief malaria carrier in Europe, *Anopheles maculipennis*, which is present throughout Great Britain, is a case in point. At the Ministry of Health's malaria laboratory at Horton, a strain has been continuously maintained through the year over a period of five years in a specially constructed insectary. This colony at present consists of many thousands of insects; the strain originated from the eggs of a single insect. If artificial light is given during the winter months, breeding is much more prolific than when only heat is given. It seems that those species which hibernate as female adults will continue to breed throughout the winter if a summer temperature is maintained—cf. the winter breeding of anopheles in South-East Russia in water-butts inside the houses.[1]

Until recently it was not known that one species of British culicine mosquito was breeding throughout the year in London and 100 feet below ground level. This species is *Culex molestus*. Since the underground railways have been used as sleeping quarters for air-raid shelters many people have complained of being bitten by mosquitoes. A search of the dark parts of the underground system revealed the presence of numerous adult culicine mosquitoes, many of them gorged with blood. At first it was thought that these were a few stray mosquitoes which had come from above ground and that they were seeking cold damp quarters where they could settle down into hibernation. When, however, some of the females were examined it was found that they were without adipose bodies, an impossible occurrence in a mosquito which is to go without food for about six months. A few days later some males were found and this was sufficient evidence that active breeding was still in progress, an unusual finding so late in the year as the end of November. A search for breeding grounds was made and they were found to be fairly numerous over a wide area, usually in the excavations below the lines and under main platforms at various stations. In most cases the water is only a few inches deep but is often 100 yards in length. Larvæ were abundant, in fact just as numerous as in stagnant pools above ground during the summer. It is obvious that temperature alone is all that is required to prevent this species from going into hibernation; there is no artificial or natural lighting in the passage ways below the lines where larvæ are developing.

As regards breeding, the number of species of mosquito indigenous in a certain area is dependent on two main factors: (1) Extent of suitable breeding grounds, (2) available blood meals for the maturation of the ovaries. In the tubes in normal times the number of people who act as blood donors is small. Persons travelling would not be stationary long enough to allow the mosquitoes to settle and have a full meal of blood. Porters and workmen may have been the chief contributors in peace-time. Now, however, the thousands of people sleeping in the tubes provide an ample supply of blood meals and this, in turn, produces a greatly increased number of larvæ and later of adults. There is a complete absence in the breeding grounds of natural enemies either of the larvæ or of the adults. In many parts of

1. Mackenzie, M.D. *Lancet*, 1923, **2**, 1225.

the tubes the atmospheric temperature exceeds 70° F. even when it is freezing outside. This means that breeding is proceeding continuously throughout the year and it is, as far as is known, the first time that this has been found to occur in nature among our 29 species of mosquitoes.

Fortunately it is a simple matter to rid the tubes of this pest. The water in which the larvæ are developing is motionless and shallow. Providing *all* the breeding grounds are treated, either with cresol or paraffin, they should be quickly exterminated. Steps have already been taken by the London Passenger Transport Board to ensure this being done.

ACTINOMYCOSIS OF THE CENTRAL NERVOUS SYSTEM

REPORT OF TWO CASES

BY NILS L. ECKHOFF, M.S. Lond., F.R.C.S.

ASSISTANT SURGEON TO GUY'S HOSPITAL; SENIOR SURGEON TO ST. JOHN'S HOSPITAL, LEWISHAM

ACTINOMYCOSIS of the central nervous system is rare, though Zachary Cope [1] has collected 85 references to it. Actinomycosis normally spreads via the connective tissues and may metastasise through the blood-stream but shows little tendency to invade bone or the lymphatic system. Cope suggests three possible methods of spread to the central nervous system. First, an isolated lesion may be found in the brain, often in the neighbourhood of the pituitary body or fornix, and the experimental work of le Gros Clark and Rake, quoted by Cope, supports the view that the spread has occurred from the nasopharynx along the perineural sheaths of the olfactory nerves to the region of the olfactory bulb. Secondly, metastatic abscess or meningitis may develop in a patient suffering from actinomycosis of the lungs, the spread being by the blood-stream. Thirdly, direct spread may take place from a primary focus in the upper or lower jaw by way of the connective tissues of the face into the pterygoid region, and so through the foramina of the base of the skull to produce a meningitis or an actinomycoma—the name sometimes applied to a well-localised mass of actinomycotic granulation tissue.

In the two cases here described the third method of spread seems the likely one, for in both the primary focus was in the jaws and after many months the patients died from basal meningitis. There were, however, additional lesions in each case. In case 1 a separate cerebral abscess was diagnosed and found in the fronto-temporal region, immediately under a sinus which had persisted after drainage of a superficial abscess in this region 9 weeks earlier. Radiography revealed rarefaction of the left frontal bone, so there can be little doubt that the cerebral abscess was produced by direct spread through the bone. In case 2, in addition to an extradural actinomycoma and a similar mass in the right side of the pons, there was a small abscess on the inferior surface of the occipital lobe which the pathologist ascribed to extension via the meninges, and not to spread by the blood-stream.

It is noteworthy that in each case the primary focus of disease (the gum) had healed, although in case 1 there was evidence of chronic osteomyelitis of the lower jaw. Dorling and I [2] have lately reported satisfactory results from sulphanilamide and sulphapyridine in abdominal actinomycosis; and it would be worth while to use these drugs in cases of cervico-facial actinomycosis, in the hope of preventing this dangerous spread to the central nervous system. Deep X rays, however, greatly benefit these cases of relatively superficial disease in the early stages. The possibility of actinomycosis must always be borne in mind in submandibular inflammations which fail to respond rapidly to simple surgical treatment, even in the absence of definite bacteriological proof. In case 1 the ray fungus was not found during life and in case 2 it was not found during the patient's last month in hospital. Whether anaerobic cultures were set up is not recorded.

1. Actinomycosis, London, 1938.
2. Dorling, G. C. and Eckhoff, N. L. *Lancet*, Dec. 7, 1940, p. 707.

CASE 1

A clerk of 42 had two teeth removed from the left side (one upper and one lower) under local anæsthesia on Dec. 17, 1938. Immediately afterwards a large swelling appeared on the left side of the cheek which persisted. Two days later five more teeth were extracted under gas. His condition did not improve; he developed persistent headache and he was admitted to hospital on Jan. 9, 1939. His urine then contained sugar. The left tonsil was red and swollen and the tongue furred. On the 19th a submandibular abscess was incised and drained. He subsequently developed œdema of the glottis and a temporary laryngotomy was performed. On Feb. 16 he was discharged.

On March 7 he was readmitted with a fluctuant lump the size of a hen's egg in the left fronto-temporal region. The tongue deviated to the left; the right corneal reflex was slightly less brisk than the left; lassitude was noted on March 11; the abscess was opened and drained. On April 6 both incisions were discharging. Radiography showed rarefaction of the left frontal bone above and behind the orbit suggesting necrosis, with chronic osteomyelitis of the left side of the mandible. On May 2 he was complaining of shooting pain above the right eye going down to the ear. The sinus in the left temporal region was still discharging pus. An indurated sinus was present below the mandible with no discharge or tenderness. There was slight facial weakness on the left side. On the 23rd two roots were removed and he left hospital again on the 25th.

He was readmitted on June 8 under my care. Temperature 104° F. The headache which he had had since the trouble began six months before had become worse, involving the whole head and back of the neck. There was no vomiting and no photophobia. He was irritable and uncoöperative but rational. He had a moist cough and there were occasional coarse râles at the apex of the left lung. The submandibular sinus was discharging, but the temporal one was dry. The left upper eyelid and the whole of the left side of the face were œdematous. On the 11th the headache was severe all day. At 10 P.M. he suddenly became unconscious, with deep stertorous breathing; oxygen and CO_2 were given but he became semi-comatose; limbs flaccid, temperature 98° F., pulse-rate 100, respirations 26, blood-pressure 120/68. Both wounds were bleeding freely. He recovered consciousness at 11.30 P.M. Next day his speech was rather thick; there was mild motor aphasia with no apraxia; he had ptosis of the left eye and the right hand was weaker than the left. Some papillœdema was noted in the nasal halves of both discs. The right abdominal reflexes were weak, the left very brisk. An extradural abscess in the left temporal region was suspected and on the 13th the skull was trephined in that region. There was no extradural pus, but the internal surface of the frontal bone was roughened and aspiration through the dura in a forward direction to a depth of ½ in. yielded 3 c.cm. of thick pus. Next day he was aphasic and drowsy, cold, clammy and sweating. The papillœdema was slightly greater. By the 17th he was much more drowsy and comatose with a weaker pulse. On the 19th he was completely unconscious; the left pupil was dilated and the right contracted and neither reacted to light. The knee-jerks were absent and both plantar responses extensor. At 10 A.M. he died.

At no time was any organism but the *Staphylococcus aureus* found in the pus from the incisions.

At *autopsy* the right lung showed a well-marked bronchopneumonia in the lower lobe. There was periosteal thickening of the left side of the mandible. The spleen was enlarged and of the so-called septic type. The interior of the temporal bone surrounding the trephine hole was granular and denuded of periosteum. There was an extradural collection of pus which extended to the orbital plate anteriorly, the vertex above and the basisphenoid medially. The dura showed a perforation opposite the trephine hole which was surrounded by congestion and purulent exudate, and the whole of the right hemisphere was covered by a thick purulent exudate. The brain was asymmetrical owing to œdema of the left temporal lobe, which also contained a small subcortical abscess. The superior table of the left orbital plate was necrotic. Microscopically the area of suppuration showed

two of the sulphur granules of actinomycosis. Mycelial threads but no clubs were demonstrated in a section.

CASE 2

A man of 25. In March 1937 his jaw had started to swell on the right side and had become fixed in the half-open position. He had had occasional toothache. External incisions were made, one on the cheek and two below the jaw; 4 weeks later an impacted right lower wisdom tooth was extracted. External sinuses discharged for 4 months, and actinomycosis is said to have been demonstrated in the pus. In November 1937 a swelling above the right ear was opened; in May, 1938, an impacted left lower wisdom was extracted; in October a painless swelling above the right eye was opened. He then began to have double vision (right eye at fault) on looking up or down, which lasted a month. His vision afterwards was blurred. In January, 1939, he could hardly stand because of pain in the back of his left thigh, and the leg was stiff. The pain steadily became worse.

When he was admitted to hospital in July he had been blind in the right eye for 7 weeks (perception of light only), and he complained of attacks of sudden giddiness when in bed, with vertigo, nausea and headache, lasting for half an hour. His right ear had been discharging for 4 months. His lower jaw was fixed half open with some thickening on the right side. The sinuses had healed. His intelligence was good. The right eye showed proptosis and ptosis, with conjunctivitis and a large corneal ulcer; the pupil was fixed and dilated. In the left eye the vision and pupil reactions were normal and there was slight proptosis. The right fundus was obscured by the corneal ulcer; the left showed some papillœdema. The skin supplied by the right supra-orbital nerve was anæsthetic; corneal sensation on the right side was lost and the left corneal reflex was sluggish. General wasting was noted, especially of the arms and legs. There was a fine intention tremor of the hands, the upper limbs were slightly spastic with increased jerks, the lower limbs were flaccid. Power was poor in the arms, very poor in the legs. The left lower abdominal reflex was absent. The right knee-jerk was stronger than the left; the ankle-jerks were absent and the plantars extensor. He was incontinent of urine and fæces. A radiogram of the skull showed some destruction of the sella turcica. He had a swinging temperature. Extradural spread of disease in the neighbourhood of the foramen magnum was suspected.

On July 22 a lumbar puncture produced fluid which set to jelly in 5 minutes. The patient at this time began to get retention of urine. Papillœdema increased and he had occasional cerebral vomiting. His legs were useless and flaccid and wasting became extreme. Later his arms also became flaccid and still weaker and pain in his back and neck became worse. He had difficulty in swallowing and developed urethritis and a bedsore. He died on Aug. 14.

Culture from the sinuses persistently gave a growth of *Bacillus coli communis* and diphtheroids.

At *autopsy* the right side of the palate was puckered and scarred. At the base of the brain the dura was separated from the periosteum by a firm rounded mass 3 cm. in diameter, which lay in a bed bounded by the lateral wall of the sella turcica, the greater wing of the sphenoid and the foramen ovale; it had ulcerated through the dura posteriorly and involved the fifth nerve. The bone was not eroded. The right portion of the pons was infiltrated for 2·5 cm. by a firm rounded mass like a dural tumour. Just deep to the inferior surface of the occipital lobe there was an abscess 0·5 cm. in diameter, filled with thick yellow pus; it appeared to have developed by extension from outside. Microscopical examination showed that the extradural mass was a chronic granuloma consisting of dense intersecting bands of fibrous tissue, surrounding areas of suppuration, in which could be seen colonies of actinomycosis. The maxillary fascia showed dense hyaline fibrous tissue with many foci of polymorphs and plasma cells but no actinomycosis. Connective tissue taken from below the foramen ovale showed a granulomatous mass containing actinomycosis colonies.

SUMMARY

Two cases of actinomycosis of the cervico-facial type with spread to the central nervous system are described.

Spread had apparently been by direct extension, and in one case there was evidence of direct spread through the bone.

If such cases could be recognised early chemotherapy would be worthy of trial.

THE AUDITORY APPARATUS AND AVIATION

BY ERNEST WODAK, M.D.
TEL-AVIV, PALESTINE

DURING the past twenty years the relationship between aviation and the auditory apparatus with its organ of equilibrium have been freely studied, and the results have been applied to the examination of pilots.

PROSPECTIVE PILOTS

It is now generally agreed that perfect ear-drums and good hearing are essential for a recruit. Candidates with purulent otitis media are always rejected and rightly so. If the otitis is completely cured, the drum well healed or with only a small perforation, and the hearing good he need not be rejected—provided the eustachian tubes are patent. Candidates with retracted drums and chronic sclerosis of the middle ear, or with an obstructed eustachian tube, should be rejected because flying aggravates these conditions. Slight deafness of the cochlear type does not justify rejection, but may become worse as a result of flying. Catarrh of the eustachian tube is definite ground for rejection because it unfits the man for flying at high altitudes; a rapid descent will cause rupture of the drum and effusion of blood into the tympanic cavity.

At one time orientation in the air was thought to depend on the vestibular apparatus, especially on occasions when vision was obstructed by mist, clouds or injury. Even slight disturbance of function in this apparatus was regarded as grounds for rejection of candidates. Extensive research by Russian and German investigators, however, has shown that proprioceptive sensibility (*Tiefensensibilität*) is much more important in maintaining orientation than the mechanism of equilibrium in the inner ear. Indeed some think that the function of the vestibular apparatus is not to maintain equilibrium but to initiate changes in it.

Candidates who have nystagmus on looking straight ahead are unsuitable for aviation. If a candidate has lateral nystagmus, but only on extreme lateral movement of the eyes, he need not be rejected unless the nystagmus is accompanied by a feeling of rotation. Candidates in whom the vestibular apparatus fails completely to respond to rotation tests and hot and cold syringing tests should be refused; but those in whom it gives a diminished response may be accepted. The mass investigations of recent years are taken by some to indicate that candidates with a hyper-excitable vestibular apparatus should be rejected. The duration of nystagmus after rotation and hot and cold syringing tests was formerly believed to be short in normal people, but recent work, especially in Germany, has shown that normal values are much more elastic than was supposed and that hyper-excitability of the vestibular apparatus need not be diagnosed unless the duration of nystagmus after the tests greatly exceeds the periods formerly accepted as normal. Some authors attach less importance to the results of tests than to the effect of flying itself on the candidate, and suggest that his reactions in the air should be studied, especially those of his vegetative nervous system as indicated by nausea.

PILOTS AFTER SERVICE

Flying may affect the ears in various ways. The noise of the engine on long flights may produce deafness of the cochlear type which can last as much as 10 hours. After long service pilots always develop some degree of occupational deafness due to an inner-ear lesion. If severe deafness occurs after a comparatively short period of service the pilot should be sent on leave; and if hearing does not improve noticeably after a long period of leave, or if deafness recurs soon after he begins flying again, he should probably give up aviation in order to avoid greater and lasting damage to his hearing. Most writers regard the noise of the engine as being the most injurious of the factors acting on the pilot's ears. Ear-plugs of wool or rubber offer some protection. Pilots with acute head colds should not go up, because they are more susceptible than usual to variations in pressure and may endanger the safety of the machine and its

occupants. Obstruction of the eustachian tubes from any cause is likely to affect the pilot because he cannot equalise the pressure on the two sides of his drum. His ears may also suffer from the effects of wind, humidity and differences of temperature.

Some years ago I made a study of the vestibular apparatus in experienced pilots, and found that excitability diminishes as a result of training; this has been confirmed by other workers. In pilots of long standing a physiological hypo-excitability develops and is a sign that they are getting accustomed to their profession. Similar findings have been recorded among acrobats and dancers; they become adapted to their vocations and follow them more readily than a person with a normally excitable vestibular apparatus would do. In spite of this diminished response to stimulation, pilots may suffer serious damage to the vestibular apparatus in stormy weather, especially if they happen to be out-of-sorts or fatigued; on such occasions the most seasoned pilot may suffer from severe air-sickness, particularly if he raises or lowers his head sharply while making a sudden turn, or while diving. The vestibular apparatus may respond so violently that he becomes completely disorientated and catastrophe is likely to follow; herein lies one probable explanation of crashes occurring without apparent cause. The hypo-excitability found in seasoned pilots is only a temporary acquirement; investigation shows that those returning to work after a long interval have recovered their normal vestibular excitability. Probably it would be wise to examine men returning from long leave with this possibility in mind.

The following points are worth noting:—

(1) In examining candidates for flying the vestibular apparatus should be investigated by recent methods, and manifest or latent hyper-excitability of the vestibular apparatus should be observed.

(2) The findings should be checked every six months and a record kept of the excitability of the vestibular apparatus so that changes in the threshold can be recognised.

(3) Further research in this field would be valuable.

STANDARD PATTERN FOR HIP SPICA

By W. Sayle Creer, M.Ch.Orth. Lpool, F.R.C.S.

ORTHOPÆDIC REGISTRAR AT SALFORD ROYAL HOSPITAL; ORTHOPÆDIC SURGEON TO THE DISTRICT INFIRMARY, ASHTON-UNDER-LYNE

THOSE who have adopted Trueta's patterns for "creamed-fabric" plaster casts [1] approve their simplicity and efficiency, but the hip spica [2] is difficult to handle because of its great size and its weight and unwieldiness when wet. Even with the new wide Cellona material, which is a great deal easier to handle, it is not possible to guarantee that every spica will be the perfect fit which is necessary to ensure efficient immobilisation. Most British surgeons fix the foot to the orthopædic table with bandages, or have it held by an assistant. The size of the pattern is reduced by applying the foot portion after the main part has set and it is safe to release the foot. The relationship of the long axis of the body and leg portions of Trueta's pattern has to be varied with the degree of abduction or flexion of the hip. At best this means that the plaster team must wait till the surgeon is certain of the position before the shape is cut out, and at worst may lead to a very badly fitting spica. In any case it precludes the use of a single, standard shape which is one of the major advantages of the scheme. The necessity for careful measurements is a further difficulty.

The basic idea of the suggested modification is to use three pieces for the hip spica as in the shoulder spica. I have found that it is possible to cut the pieces out without even seeing the patient. Others have tried the method and agree that it seems to be fool-proof. The only disadvantage is that it takes a few minutes longer to apply. The advantages are:—

Smaller pieces are used which are very easy to handle.

Only three approximate measurements are necessary for the average adult.

The shape need not be modified for different degrees of abduction or of flexion of the hip-joint.

It provides great strength at the groin because of the overlapping of the three main pieces

The foot portion is added at the most convenient time—after release of the foot.

A good fit can be guaranteed every time.

There is no waste of material.

THE PATTERNS

Seven or eight layers of 24 in. cellona material suits every adult except outsize ones.

1. *Posterior body piece* (fig. 1).—Depth 12 in.[3] Semicircular portion, 2 in. deep, 5 in. across, cut out to allow

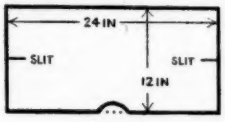

FIG. 1
Posterior body piece.

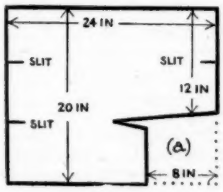

FIG. 2
Anterior body piece.

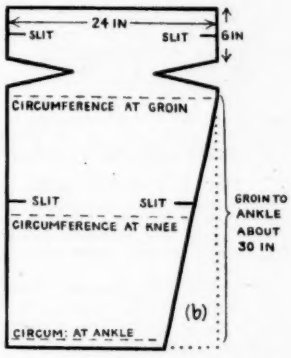

FIG. 3—Leg piece.

use of bedpan. A slit 3 in. deep in the middle of the short sides ensures a snug fit at the waist.

2. *Anterior body piece* (fig. 2).—This extends on the anterior and lateral aspects of the thigh for about 6 in. Depth 20 in.[3] Slits 3 in. deep as before to ensure snug fit. The portion (*a*) cut off is about 8 in. wide and is used later for the footpiece.

3. *Leg piece* (fig. 3).—This extends upwards on the outer side of the body for about 6 in. Total length (depth) 36 in. for average adult. Three measurements of the patient are useful, though not essential—the circumference at the groin, knee and ankle. Cut out the V on each side to separate the body and leg portions to a depth of 8 in. Cut slits 2 in. deep at each side just above the knee to ensure snug fit. The portion (*b*) cut off is used to add further strength at the hip.

APPLICATION

The use of borax, roughly one heaped tablespoonful to a sink filled with tepid water to a depth of 2 in., to retard setting is strongly recommended.

Soak, drain, smooth and apply the posterior body piece. After moulding fix partially with two or three turns of moistened open wove bandage (or plaster muslin).

Soak, drain, smooth and apply the anterior body piece. Mould carefully and fix partially with moist bandage. Do not take too long in the moulding and do not fix completely because it is necessary for all three portions to coalesce into a homogeneous mass.

Soak, drain, smooth and apply the leg piece to the outer side of the leg and body. The body part will stretch roughly from the opposite anterior superior iliac spine to the opposite tuber ischii. Mould carefully, turning back the edges of the leg portion if necessary in order to leave the ¼ in. gap or gutter. The portion (*b*) which was cut off the leg piece is used as a reinforcement at the back of the hip, a place which would otherwise be weak. Fix the whole spica firmly with moistened open wove bandage.

The weak place can be avoided by making the anterior and posterior body pieces of almost identical shape. It is not easy to apply such a shape to the under surface of the body, hip and upper thigh without leaving ridges and spaces. It is essential that the posterior body piece shall be smooth on the inside and incapable of

1. Girdlestone, G. R. *Lancet*, Sept. 7, 1940, p. 287.
2. Trueta, J. *Med. Wom. Fed. quart. Rev.* January, 1940, p. 15.
3. If the surgeon intends that the body portion should extend to the upper ribs the depth of the body portions must be greater than 12 in. and 20 in. respectively. The spica described here is intended to reach only to the lower ribs.

causing pain or pressure sores. This is achieved most satisfactorily by using the smaller shape plus the reinforcement.

One 6 in. by 6 yd. cellona bandage should be used to finish the groin portion of the spica, as this part must be strong.

When the main part has set the foot is released from the traction table foot-piece or assistant's hands. The small portion (*a*) cut off from piece two is used as a posterior slab, its side being nicked or pleated according to choice to ensure close fit. Two 6 in. by 6 yd. cellona bandages are used to complete the foot-piece, the second one being run up to the knee. If it is not carried up the leg two 4 in. by 4 yd. bandages suffice.

I have pleasure in acknowledging Mr. R. Ollerenshaw's assistance in preparing the article and his permission to evolve the spica in the orthopædic department at Salford Royal Hospital.

PELLAGRA FOLLOWING CHRONIC ALCOHOLISM

By Eli Davis, M.Sc., M.D. Manc., M.R.C.P.
SENIOR RESIDENT PHYSICIAN AT ST. STEPHEN'S HOSPITAL, L.C.C.; AND
E. Hinden, M.B. Camb., M.R.C.P.
ASSISTANT MEDICAL OFFICER AT ST. CHARLES'S HOSPITAL, L.C.C.

"Cases (of pellagra) following in the wake of chronic alcoholism have never been reported in England" (*Lancet*, Nov. 9, 1940, p. 594). We therefore report the following case.

A tailor, aged 69, had lived in Eire till 1900, and subsequently in England. He gave a long history of persistent alcoholism, particularly in the past 10 years. For some years up to 1936 the chief item in his diet was beer, and often he would take nothing but beer for days. Only on Sundays, and then not always, did he have a good meal. He did not enjoy food. About 2 years ago he had severe diarrhœa lasting several months. In 1938 he began to suffer from a rash which was much worse in summer, and had hospital treatment for it, and for dizziness, from May to September, 1938. His rash became exfoliative, and did not improve with local treatment.

We saw him on Nov. 15, 1938, when he complained of continual dizziness, recent sore gums, diarrhœa, and the rash. He was thin and mentally dull. There was a red, rough, scaly, symmetrical, sharply-demarcated rash on the backs of his hands, feet, and heels, sacrum, neck and ears. On the neck it had a pigmented border. No visible glossitis was present. His knee-jerks were sluggish, ankle-jerks absent, and his gait was unsteady. He had frequent cramps in the legs. His calves were not tender, and his optic discs were normal. There was no other neurological abnormality, motor or sensory. He was given a full diet, and nicotinic acid 100 mg. a day for a month. His rash began to improve after 24 hours on nicotinic acid, and after a month was notably better. From Dec. 20 to 24 he had severe diarrhœa. In January, 1939, his skin and general condition were better, but there was still dizziness and much ataxia. From Feb. 4 full doses of vitamin B (Marmite, Bemax and Benerva) were given by mouth. By Feb. 16 his gait had improved. He was discharged on March 15, walking well, without vertigo, skin clear apart from roughness, and determined to forego alcohol.

On May 7 he returned to St. Stephen's Hospital. He had taken to beer again. The rash had reappeared, and was much the same as on Nov. 15. On walking he was apt to fall every few yards. Giddiness was severe. He was kept under observation for a month. The rash did not alter. On June 12 he was started on a 3-weeks course of nicotinic acid, 50 mg. four times a day. By June 19 his skin was much clearer, but his other symptoms had not improved. From that day vitamin B was given by mouth in full doses. On July 3 his skin was almost clear. Not till mid-August, however, was he walking well and free from dizziness. By then he was bright, and claimed that he had not felt better for years. We saw him again in November, 1940. He stated that from May to October the rash had been severe, but dizziness moderate. On examination the rash was characteristic but not severe, but there was obvious ataxia.

Investigations.—Blood-pressure: 1938, May, 140/70 mm. Hg, July, 135/80, September, 110/70, Nov. 15, 145/90, Nov. 24, 110/70; 1939, May, 125/80, July, 140/80; 1940, Nov. 19, 100/65, Nov. 20, 135/75, Nov. 21, 116/70, Nov. 24, 100/65.

Uroporphyrins: May, 1938, present ++; November, 1940, present.

Blood-counts: May, 1939, white cells, 5100 per c.mm.; differential count normal. November, 1940, red cells 4,840,000; Hb. 100%; colour-index 1·03; white cells 6300. Wassermann and Kahn reactions negative.

Cerebrospinal fluid: November, 1940, protein, 65 mg. per 100 c.cm.; globulin, chlorides, cell-count and colloidal-gold reaction normal; Wassermann reaction negative.

Gastric analysis: no free acid, even after histamine.

It is of interest that the rash improved after taking nicotinic acid but that nervous features abated only after the addition of vitamin B. This sequence recurred the second time he was admitted. The view that a nicotinic-acid deficiency gives rise to the dermatitis and a thiamin deficiency to the neuritic signs was therefore supported by this case.

We thank Dr. W. Allen Daley, medical officer of health to the London County Council, and Dr. D. S. Sandiland, medical superintendent of St. Stephen's Hospital, for permission to publish this case, and Dr. G. W. Goodhart, group pathologist, for his reports.

A NOTE ON THE ÆTIOLOGY OF ERYTHEMA NODOSUM

By A. Lisle Punch, M.B. Lond., M.R.C.P.
SENIOR PHYSICIAN TO THE ROYAL NORTHERN HOSPITAL, LONDON
PHYSICIAN TO THE BROMPTON HOSPITAL.

For two or three years before this war I had been investigating the reaction of recruits to the nursing staff of the Royal Northern and Brompton Hospitals to the intradermal tuberculin (Mantoux) test. On joining the hospital each new nurse was submitted to (1) a clinical examination, (2) an X-ray examination of the chest, (3) an estimation of the erythrocyte-sedimentation rate and (4) a Mantoux test.

The Mantoux test was performed with old tuberculin supplied by the Medical Research Council. A dilution of 1 in 10,000 was used in the first instance. If a negative reaction was obtained to this, the test was repeated a week later with a dilution of 1 in 1000. If this also was negative a further test was performed with a dilution of 1 in 100 after another week. The test was considered to be positive only if a definite wheal developed surrounded by erythema. Erythema alone was recorded as negative.

All nurses who gave a negative reaction in all dilutions were subsequently followed up, an erythrocyte-sedimentation rate and a Mantoux test with a dilution of 1 in 100 being performed at regular intervals.

The investigation was initiated in the hope of determining a number of points in connexion with tuberculous infection in adults. It will, I think, be generally agreed that healthy people who give a negative Mantoux test have never had that primary infection with the tubercle bacillus which a considerable proportion, though by no means all, of the population have had by the time they reach adult life. This investigation therefore aimed at determining (1) what percentage of healthy young women entering the nursing profession at two London hospitals had never been infected by the tubercle bacillus; (2) at what time, if any, during their training such primary infection occurred; (3) whether such primary infection was associated with any clinical manifestations; and (4) in what percentage, if any, such primary infection was associated with manifestations of active tuberculous disease, whether pulmonary or otherwise.

The war put a stop to this investigation and rendered valueless the work which had already been done, for it is only from continuous observation over a long period that any conclusions can be drawn. As a side issue from the main line of the investigation, however, three cases appear to throw light on the ætiology of erythema nodosum.

Case 1.—Aged 18. Student radiographer. Had worked for 15 months in X-ray department at St. George's Hospital before coming to the Royal Northern Hospital. No previous illnesses. No history of tuberculosis in family.

Oct. 26, 1938. Clinical examination; no evidence of disease in any system. Radiography of chest: no infiltration of lungs and no calcified primary focus or calcified glands. Sedimentation-rate 6 mm. in 1 hour. Mantoux test negative to all three dilutions.

Nov. 26. Sedimentation-rate 6 mm. in 1 hour. Mantoux test negative to 1 in 100.

Dec. 16. Sedimentation-rate 8. Mantoux test negative to 1 in 100.

Feb. 22, 1939. Sedimentation-rate 5. Mantoux test negative to 1 in 100.

April 4. Sedimentation-rate 6. Mantoux test negative to 1 in 100.

At this stage the student expressed her unwillingness to continue the investigation. Sixteen months later, on Aug. 8, 1940, she reported sick with aching all over, headache and a temperature of 100° F. After seven days the characteristic lesion of erythema nodosum appeared on the legs. The sedimentation-rate was 45 mm. and the Mantoux test gave a strongly positive reaction with a dilution of 1 in 10,000, the wheal measuring 17 mm. and the surrounding erythema 45 mm. across.

CASE 2.—Aged 19. Had lived all her life in Ireland. No previous illnesses. No tuberculosis in family. Had not done any previous nursing.

Nov. 16, 1937. Clinical examination; no evidence of disease in any system. Radiography of chest: no infiltration of lungs and no calcified primary focus or calcified glands. Sedimentation-rate 8 mm. in 1 hour. Mantoux test negative to all dilutions.

Dec. 16. Sedimentation-rate 8 mm. Mantoux test negative to 1 in 100.

On Feb. 10, 1938, the nurse reported sick, saying that she had been feeling run down for a fortnight, that her ankles were swollen and that she had "boils" on her legs. The "boils" were found to be the fading rash of erythema nodosum. The sedimentation-rate was 58 mm. and the Mantoux test was strongly positive to 1 in 10,000 (wheal 15 × 20 mm.).

CASE 3.—Aged 22. No previous illnesses. No tuberculosis in family. Had nursed for 4½ years in a general hospital, where she had occasionally come in contact with cases of tuberculosis.

Nov. 4, 1938. Clinical examination: no evidence of disease in any system. Radiography of chest showed no infiltration of the lungs and no calcified primary focus or calcified glands. Sedimentation-rate 5. Mantoux test negative to all dilutions.

Jan. 6, 1939. Mantoux test negative to 1 in 100.

On Jan. 27 the Mantoux test became positive to 1 in 100 (wheal 5 mm., erythema 12 mm. across). On Feb. 13 the nurse developed typical erythema nodosum, chiefly on the legs, with a febrile reaction lasting 3 days. The sedimentation-rate was then 105 mm.

All these patients made a rapid recovery and up to the present have remained in good health.

DISCUSSION

In these three cases I was able to observe a persistently negative Mantoux test becoming positive—in other words, to detect the occurrence of the primary tuberculous infection in three young adults. Coincident with this primary infection all three of them developed erythema nodosum. No other cases of erythema nodosum were observed in this investigation. It is, I think, logical to conclude that in these three cases the erythema nodosum was a manifestation of the tuberculous infection. It has been suspected for a long time that there is some association between erythema nodosum and tuberculosis, but so far as I am aware there has hitherto been no such definite evidence as this.

SUMMARY

New members of the nursing staff at two London hospitals were submitted to a clinical examination, radiography of the chest, an estimation of the sedimentation-rate and a Mantoux test. Those giving a negative reaction to a dilution of 1 in 100 in the Mantoux test were regularly re-examined.

Three young women in whom the Mantoux test had repeatedly been negative developed erythema nodosum. This was accompanied or immediately preceded by a positive reaction to the Mantoux test and a rise in the sedimentation-rate.

These cases demonstrate that erythema nodosum is at least sometimes a manifestation of a primary tuberculous infection.

DIET OF ANÆMIC WOMEN

BY NAJIB U. KHAN, M.B. Durh.

PHYSICIAN TO THE DISPENSARY AND HONORARY MEDICAL OFFICER TO THE DAY NURSERY, NEWCASTLE-ON-TYNE

THE diets of 22 unselected mothers of working-class families in Newcastle-on-Tyne were investigated for a week and the blood-picture studied to assess the effects of various supposed ætiological factors in "idiopathic" hypochromic anæmia. The daily intake of organic and mineral foods (iron, calcium, phosphorus and copper) was calculated in each case.

Sahli's modification of Gower's hæmoglobinometer was used. The instrument is standardised so that a reading of 100% is equivalent to 17·3 g. of hæmoglobin per 100 c.cm. of blood. This differs from Haldane's hæmoglobinometer in which 100% stands for 13·8 g. per 100 c.cm. In women the average hæmoglobin content of blood is 13·7 g. per 100 c.cm. and there is a diurnal variation of at least 10% (Wright 1940). Women in this series were regarded as being anæmic if their hæmoglobin was 13 g. per 100 c.cm. or less; on Sahli's scale this can be taken as 75% and under.

Study of the hæmoglobin, red-cell count and colour-index of my 22 subjects showed that 12 of them were anæmic. Of the anæmic subjects, 1 had megalocytic and the rest microcytic anæmia. The 11 women with microcytic anæmia were carefully examined, a full account was taken of their diets, the possibility of excessive blood-loss was inquired into and three occult-blood examinations were carried out in each case. In only one woman could the anæmia be attributed to excessive blood-loss; she was excluded from this study, leaving 10 patients with anæmia of microcytic type and 10 with normal blood. All the women were apparently free from diseases which might cause anæmia and none of them had a history of excessive menstrual flow; none of them had been pregnant for two years.

HÆMOGLOBIN IN RELATION TO DAILY FOOD INTAKE

Age	Hb. %	Cal.	Protein (g.)		Fats g.	Carb. g.	Fe. mg.	Ca. mg.	P. mg.	Cu. mg.
			Total	Animal						
NORMAL GROUP										
41	80	3021	79	22	77	485	12·7	109	640	0·8
30	75	3428	112	52	134	420	10·5	586	1416	1·16
42	85	2933	77	35	104	403	10·9	232	1099	1·74
48	90	2066	63	30	85	246	14·0	183	980	1·5
38	80	3267	118	49	113	423	13·7	396	1039	0·87
36	77	1369	40	14	42	198	5·2	47	340	0·42
53	80	3046	89	33	107	411	10·5	156	926	0·86
43	83	3210	99	35	91	477	10·6	279	814	1·64
35	82	2481	86	31	63	376	8·7	364	1114	0·67
38	76	1096	35	19	46	128	4·5	69	372	0·27
Average—										
40	81	2592	80	32	86	356	10·1	242	874	1·04
ANÆMIC GROUP										
45	71	3157	120	42	93	439	14·7	354	1167	1·09
39	65	2111	81	31	80	253	11·3	198	776	0·81
32	45	3056	81	25	70	507	10·0	347	1205	1·5
47	30	1899	60	28	65	255	7·7	204	618	0·51
37	60	2227	81	34	71	303	12·6	331	618	1·14
27	58	2247	60	18	69	332	7·4	134	526	0·78
30	60	3344	107	62	128	418	16·2	591	1226	1·34
47	58	3493	110	22	97	547	12·8	160	919	1·19
43	70	2893	108	42	83	408	11·2	293	1208	1·18
29	65	3088	110	34	84	453	13·2	111	1163	1·03
Average—										
38	57	2751	92	34	84	391	11·6	272	942	0·99
Minimum standard*—										
	75	3000	70	30	—	—	12·0	680	1320	2·0

* Sherman's (1937) figures modified in the light of more recent experiments.

The table shows that on the whole the anæmic subjects were taking a better diet than those without anæmia. This accords with the observations of Davidson and others (1933). The table also shows that there is no relation between the total iron content of the diet and the hæmoglobin content of the blood in the cases of hypochromic anæmia; in the whole series 12 had an iron intake below the standard daily requirement of 12 mg. and only 5 of these were anæmic; whereas of the 8 who were getting 12 mg. or more daily 5 were anæmic. The lowest iron intakes (4·5 and 5·2 mg. per day) were in two

subjects who were not anæmic; whereas the highest intake (16·2 mg.) was in a woman who was anæmic.

McLester (1931) and others have suggested that calcium may have some relation to iron absorption, and thus to the hæmoglobin level; but in this series the calcium intake on the whole is so low that any suggestion of a relation between calcium intake and anæmia seems hardly justifiable. The copper intake is also below that considered essential for hæmoglobin formation, in which copper has generally been supposed to play a catalytic part. I have been unable to find any other series of cases reported in which the copper intake has been correlated with hæmoglobin; the present study shows no relation between the two. Nor could I find any relation between the hæmoglobin level and the phosphorus intake, the calcium-phosphorus ratio or the total protein.

Swedish workers (1937) point out that there is a rise in hæmoglobin as the diet becomes more varied thanks to the increase of animal protein and the addition of fruit and vegetables to the diet. Their results are not uniform, but they suggest that lack of animal protein, and to a smaller extent of fruit and vegetables, lowers the hæmoglobin level. But in my series among the 7 women who were taking less than 30 g. of animal protein per day 4 were anæmic and 3 normal; and the average daily intake of animal protein was 32 g. in the normal group and 33·8 g. in the anæmic group. The fasting gastric juice was tested for free acidity in every case; 17 of the 20 gave no reaction to Congo red or thymol blue, and of the 3 who gave positive reactions 2 were anæmic and 1 normal. No conclusion can therefore be drawn as to the influence of low gastric acidity.

SUMMARY

The diets and blood-pictures of 22 women were investigated in an attempt to correlate the incidence of hypochromic anæmia with a deficient intake of organic or mineral foodstuffs. No relation could be established between the hæmoglobin level and the intake of iron, phosphorus or animal protein. The calcium intake of the whole series was too low for any conclusion to be drawn, and the intake of copper throughout was also lower than the accepted minimum figure.

I am indebted to Dr. A. J. Smith and Prof. David Burns for their help and advice and to the faculty of medicine of the University of Durham for permission to publish this article.

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CONVULSION THERAPY WITHOUT CONVULSIONS

BY G. CAMPBELL YOUNG, M.R.C.S., D.P.M.
DEPUTY MEDICAL SUPERINTENDENT AT BRACEBRIDGE HEATH HOSPITAL, LINCOLN

OTHER psychoses sometimes respond more dramatically to convulsion therapy than schizophrenia for which Meduna introduced it, and improvement sometimes occurs even when the convulsant drug fails to produce a fit. In the case reported here, the drug was given in subconvulsive doses, and no fits appeared, but the patient made a good recovery.

A woman, aged 38, whose husband had died a year earlier, was admitted to hospital on Aug. 21, 1940, in an acutely confused, destructive and restless state with vivid auditory and visual hallucinations. The restlessness necessitated full doses of sulphonal, hyoscine and morphia, and later a chloral and bromide mixture. Treatment had to be continued in bed; there was no sign of improvement, and the patient was becoming exhausted and had lost 6½ lb. in weight since admission. On Sept. 27, 5 c.cm. of 10% Phrenazol (Boots) was given intravenously followed after 1 min. by another 6 c.cm. There was little reaction and no convulsion. Next morning 6 c.cm. and 7 c.cm. were given, and in the evening 7 c.cm. and 8 c.cm., still without convulsion. Mental improvement was already beginning. On Oct. 3, 4 c.cm. was given without convulsion but with further mental improvement, so much so that the patient was allowed up in clothes for the first time since her admission. The mental state regressed towards the end of the second day after the injection, but improved again after an injection of 4 c.cm. on Oct. 7. Up to Oct. 18 injections of 4 and 5 c.cm. were given at three-day intervals without producing a convulsion. After each injection further improvement was observed. Treatment was stopped on the 18th, three weeks after its inception. By Nov. 11 the patient was normal and had full insight. Her weight had increased from 6 st. 2½ lb. at the beginning of treatment to 7 st. 5 lb. She has never looked back.

The fact that there was regression in the interval between injections in the early days of treatment seems to be evidence that the beneficial results were produced by the drug. Signs of reaction were slight and the patient was not distressed as patients so often are when no fit follows. Presumably this was because the dose was considerably below the convulsion-producing dose.

I thank Dr. John Macarthur, medical superintendent of Bracebridge Heath Hospital, for his help and for his permission to publish this case.

Medical Societies

ROYAL SOCIETY OF MEDICINE

SECTION OF EPIDEMIOLOGY

AT a meeting of this section held on Dec. 20 the chair was taken by Dr. ALISON GLOVER, the president, and a discussion on

Hygiene in Air-raid Shelters

was opened by Dr. P. G. STOCK. Before the collapse of France, he said, it had hardly been expected that shelters would be used as dormitories, and the Government's policy had been to provide public shelters for those caught in the streets or unprovided for some reason with domestic shelters. The feeling of being safer when unable to hear guns or bombs had driven people to places never intended as shelters. When a serious public health problem arose, the Minister of Home Security and the Minister of Health had appointed a committee under Lord Horder to investigate the situation, but very little sanitary improvement had been effected by the middle of October. Execution depended mainly on the borough engineer's department which was short of materials and labour and overwhelmed with even more urgent work. In most of the larger shelters there was overcrowding, lack of cleanliness, insufficient closet accommodation and inadequate ventilation. Many shelters were damp, and the others became even more overcrowded. In very few shelters was there adequate lighting or any heating at all. Many large shelters had no pipe water supply and were below sewer level, necessitating bucket sanitation. Some tube stations had a mosquito problem. The Government had done much. The Minister of Health himself took immense personal interest and visited shelters three or four nights a week, despite his many duties. Overcrowding was dealt with as far as possible by dispersion and by voluntary evacuation. A ticket system had been introduced in most shelters provided with bunks. Much extra shelter accommodation had been secured, but grave overcrowding still existed. The Horder Committee had urged the use of any available means of ventilation. The policy of rendering shelters gastight had been abandoned, curtains had been removed and where possible fans provided. Coal stoves were to be introduced into surface shelters; the supply difficulty made electricity impossible.

In large shelters medical aid-posts were being established to detect early infectious disease and deal with accident or acute illness. Serious cases should be removed to hospital as far as possible. The risks of epidemic illness would be best met by preventive measures among the general population. Immunisation against diphtheria was strongly urged. Air-borne infections could be minimised by spraying the air. Orders had been placed for two types of apparatus. A large-scale trial had been started at the Marble Arch tube station, where the antiseptic mist could be intro-

duced through the plenum ventilation system, and at Bond Street, where compressed air was used to spray the mist. It was important to have a sufficiently fine mist; something like Lister's carbolic spray was coming into its own again. Dust must also be dealt with. Masks against droplet infection were a practical suggestion. Precautions must also be taken against lice-borne disease. Short courses of instruction and a pamphlet on body parasites had been provided for wardens. Now was the time to ensure adequate cleansing stations and to consider improvising methods if need should arise. A new insecticide powder hung about garments, remaining active for a week. The mosquitoes bred on large collections of stagnant water in tubes; the only species found was *Culex molestus* which bit savagely, though not conveying disease. Active measures had been taken: cresol turned the pools milky and showed up larvæ, but the collections must be pumped out or efficiently treated.

Inadequate emptying and cleansing of pail latrines had added to the difficulty of insufficient supply and poor screening and lighting; a hopper emptier had proved useful. Great responsibility rested on shelter wardens who could do, and did do, so much for those under their care. There had been a considerable reduction in the total number of persons sheltering in tube stations, but the reduction did not extend to the poorer areas.

The PRESIDENT observed that each type of shelter had its own problems, most of which were interlocked problems for the engineer and the doctor. Additional provision for washing and de-infestation was needed outside the shelter. An inherent and incurable defect was that no sunshine could enter; in most shelters darkness was combined with the two cardinal environmental sins: overcrowding and damp. It was inevitable, as the Royal Commission of 1861 said that if more than a certain number were placed in a given space, the lives of some and the health of others would be sacrificed. Abatement of overcrowding was the primary problem. Damp drove people to drier shelters and thus was a potent factor in overcrowding. The use of school shelters by the public required especial supervision; the time for cleansing might be inadequate. Fortunately the blitzkrieg had started four months before the epidemic season, allowing time for preventive measures and for some acclimatisation of the public to each other's nasopharyngeal infections. Moreover, the infectious diseases had so far this year behaved well. Casualties had been extraordinarily small. The shelters had stood splinter and blast much better than many had anticipated and it was for epidemiologists to minimise casualties due to infection.

Dr. C. F. WHITE described the invasion of the city by some 20,000 nocturnal visitors from neighbouring boroughs, when its authorities had planned daytime shelter only for its large day-population. Strutted basements were far less popular than tubes. It was easy enough to say what ought to be done, but quite another matter to provide the remedy. Before the war the whole aim had been to abolish underground rooms and to get everybody up into light and air. It was all very well to talk about dispersal; people would not go. Surface shelters were not much used at night, and to get away from noise and fear some people would face all the other disadvantages; and the psychological benefit of this must not be forgotten. The principal sufferers would be the children. Compulsory evacuation was not practicable. If the shelter doctor certified that a child's life or health was endangered by shelter life it would be possible to enforce removal either to the country or to a shelter better hygienically if less safe from bombs.

A tube station platform was quite unsuitable for infectious illness. There should be special sickbay shelters for brief illnesses. Airspray was not adequate without isolation. Heating might or might not be necessary. Overcrowded deep shelters tended to be too hot and humid and smaller surface ones too cold, but vitiation of the atmosphere must not be risked for the sake of warmth, which could be provided by wearing more clothes. Lighting was less difficult, but must be dimmed for sleep. Condensation damp could only be dealt with by ventilation or by insulating cold surfaces. The chemical closets had been appallingly abused by a certain section of the population; anything more elaborate than a strong pail containing a deodorant coaltar solution, with a simple seat, was not, in his view, worth providing. The large public conveniences had been kept open all night, but shelterers would not go to them. The pneumatic ejector system would greatly reduce labour. Ascertainment of lousiness was difficult, and must depend on complaints or reports of shelter doctors. There must be some ablution facilities for those who were homeless or who went straight to work from the shelters. Never was there a time when it was more necessary and more practicable to instruct people in personal hygiene. Critics of the medical officer of health should try to realise the difficulties under which he was working; it was all a series of compromises and expedients.

Dr. J. R. DAVIDSON thought epidemiologists were optimistic if they believed that a major epidemic could be avoided as things were. People went to tube shelters because they gave much more protection. If overcrowding was to be avoided, people must be provided with a shelter which they regarded as safe. The local authorities ought to have full responsibility for the tubes. It was not enough to say that people ought to keep warm with blankets; the blankets must also be sterilised.

Dr. K. W. C. SINCLAIR-LOUTIT said that proper lighting at once prevented much of the abuse of closets. Much fouling was due to small children who could not manage the adult size. Chemical closets must be cleaned adequately, and this was expensive. Many cases of notifiable disease did not go to hospital and used ordinary shelters; these included tuberculous patients and many other infectious persons who had as much right to shelter as anyone else. Specialised space for the tuberculous ought to be provided.

Dr. J. E. A. UNDERWOOD thought the problem was analogous to the provision of houses for the tuberculous and that the psychological factor would make the problem of isolation insuperable; patients would not label themselves by going to special shelters. If influenza and other respiratory infections were segregated, it would be very serious if ever the patients had to be shifted. A large row of bunks constituting a sickbay often caused shelterers to complain that precious space was being wasted. Complaints had been received that lavatories were too near bunks; if they were spaced out in small sections among the bunks people might go outside and foul the ground. Washing facilities created the problem of disposal of waste water. He had found no infestation in the shelters, but could not expect this to continue. Some form of artificial sunlight might be introduced into larger shelters.

Dr. ALVA BENJAMIN pleaded for more coöperation between medical and engineering departments and more authority for the medical. A medical officer of health could not even order the redisposition of wrongly placed bunks.

Dr. W. H. BRADLEY urged the use of masks against droplet infection despite certain difficulties inherent in their use. The shelter population, in the extremes of temperature and humidity, might not take kindly to them. After use the mask must be cleaned or sterilised. Nevertheless it was worth trying to find a type of mask which met the needs of the shelters. The one thing a mask could reasonably do was to prevent direct projectile infection. Field observation had shown objections due to shyness, indifference and the unpleasant condensation. A cellulose acetate screen could easily be cleaned by sponging and polishing. A "yashmak" veiling type might be more acceptable.

LORD HORDER said that the shelter problem must be dealt with in opportunist or pragmatic fashion. Sometimes officials seemed to think that little could be done, but recommendations must be couched in positive and practical terms, and the psychological appeal must be borne in mind, even if the result sounded to the scientific ear a little trivial. There were two not incompatible policies: a long-term policy of "unloading" and a short-term policy of making the best of present circumstances. So far as lethal casualties went, it was fifty-fifty between deep and surface shelters. Valuable research was being undertaken in the attempt to solve the problem, and would make important contributions to preventive medicine. There was a unique opportunity for health education; the people listened well and really tried to carry out the suggestions given them.

Reviews of Books

Orthopedic Operations

By ARTHUR STEINDLER, M.D., F.A.C.S., professor of orthopedic surgery, State University of Iowa. London: Baillière, Tindall and Cox. Pp. 738. 50*s*.

THOSE who visit the clinic of Dr. Steindler at Iowa City find there a remarkable organisation under the direction of one of the most competent, painstaking and best-read orthopædic surgeons in the world. Working with him are keen junior men from many countries and among the activities of master and pupils are a careful study of cases treated at the clinic and of contemporary writings. The influence of this work is reflected in every page of Dr. Steindler's new book. He is at his best when he speaks from personal experience; his exposition of the methods of others is not always strictly accurate—for example, in describing the treatment of spondylolisthesis he does not give credit to B. H. Burns for being the first surgeon to employ grafting by the anterior route. Some will quarrel with his opinion of the value of certain procedures; thus Foerster's operation for spastic paralysis is described without the condemnation which most surgeons consider it deserves, and subcutaneous tenotomy for torticollis (which is the method of choice of many competent English surgeons) is dismissed as "obsolete and definitely to be condemned." Dr. Steindler almost entirely ignores the experience of the European surgeons who performed thousands of amputations during 1914–18 and were in touch with their patients for years afterwards when the problem of satisfactory artificial limbs was dominant. Nor does he state clearly that amputation in the lower limb should, whenever possible, be performed with the fitting of a satisfactory prosthesis in view. The application of this principle in the last war reduced the types of lower-limb amputations to five, and consigned those of Pirogoff, Gritti-Stokes and Ssaban jeff to the retirement of surgical history. The treatment of peripheral nerve injuries is similarly disappointing—one of the most important considerations, the reactions produced by different types of suture material, is not even mentioned. But when Dr. Steindler speaks of conditions to which he has devoted his own time and thought there is no uncertainty or hesitation. The account given of the surgery of spastic paralysis and infantile paralysis is superb. He has brought to the treatment of these conditions all the ingenuity of which he is capable, and these sections should be read by every surgeon who is concerned with the treatment of crippled children. The arrangement of the book is novel and successful. The first section deals with general surgical principles and the approaches to different parts of the body; in the second operations are described in detail; in the final and most valuable section operative treatment is considered in relation to the condition which it is intended to relieve. The reader who wishes to learn all about a method must consult all three sections, but he will do so with profit and pleasure, for this is a book which deserves to become a standard work.

Medical Diseases of War

By Sir ARTHUR HURST, D.M. Oxfd, F.R.C.P., consulting physician to Guy's Hospital; lieutenant-colonel, late R.A.M.C., and late officer commanding Seale Hayne Hospital for Functional Nervous Diseases. London: Edward Arnold and Co. Pp. 327. 16*s*.

THIS is a new book based on the familiar one called more modestly "Medical Diseases of the War." Its predecessor, first published in 1916 and augmented in 1918, was a review of experience, mainly personal, of medicine from both western and eastern fronts. It was often consulted during the years of peace, especially for its authoritative and pioneer work on functional nervous diseases. With the second German war many of us packed it with our kit as the best available guide to the problems we expected to meet. This completely revised version, containing additional experience of the last war, a section on skin diseases by Dr. H. W. Barber, some fresh views on the neuroses written with the assistance of Dr. Rose and a chapter on gas poisoning, is even more essential to the war-time doctor. New problems, of which blast is one example, have already arisen and a new literature is growing with them. This book is a framework in which to fit them as they arise, and we hope that Sir Arthur Hurst will do the fitting in future editions.

Diagnosis and Treatment of Diabetes

(3rd ed.) By W. WILSON INGRAM, M.D., F.R.A.C.P. London: Angus and Robertson. Pp. 150. 6*s*. 6*d*.

WE have to thank the introduction of the modified forms of insulin for a new edition of this book. It is primarily intended for Australasian medical practitioners and diabetics, as the special analyses of Australian foods indicate, but it also provides a sound and practical account of the treatment of diabetes mellitus. The diets are easily followed and carefully balanced, fat and protein balance being considered as well as that of carbohydrate. The calorie values and the ketogenic ratios conform with general practice in this country. The experience of the author is well illustrated in the references dealing with urine testing; the fact, which he emphasises, that diabetic patients recovering from coma may secrete urine containing sugar when the blood-sugar has reached normal limits is not sufficiently appreciated by medical men. The book is one which can be read by intelligent diabetic patients, as well as their doctors.

Chemistry, Life and Civilisation

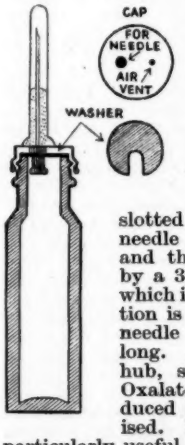
(2nd ed.) By HUBERT T. S. BRITTON, D.Sc. London: Chapman and Hall. Pp. 266. 5*s*.

THIS is a cheap edition of a book published in 1931, certain advances in knowledge since then being treated in a supplement on vitamins, new drugs, synthetic rubber and artificial wool and silk. It is a popular work of the better sort, beginning with an explanation of chemical principles and then embarking on the universe and the emergence and maintenance of life. Apart from slight errors in perspective (such as the danger of carbon monoxide in tobacco smoke) the physiological chemistry is good, and digressions therefrom—for instance on the manufacture of soap—fascinating. Other chapters on glass and pottery making, clothing, paper, fertilisers, alloys and power are full of interest and information. The excellent illustrations are nearly all photographs. The book is good value for the money, and is ideal for impressing students of chemistry with the wide applications of their subject.

New Inventions

OUTFIT FOR TAKING VENOUS BLOOD

THE outfit illustrated eliminates the use of syringes, and has been found to save time as well as expense from breakages. It is inexpensive to make up, and can be used repeatedly. There is no risk of the hæmolysis which is often caused by water or spirit in syringes. It consists of a screw-capped bottle of about 25 c.cm. capacity, of the type known as the "Universal Container" (United Glass Bottle Manufacturers, type H 53) with a thin aluminium cap. A needle passes through the cap and is held in position by a slotted washer of tinplate, the hub of the needle lying between the cap of the bottle and the washer. The needle is protected by a 3-in. × ⅝-in. test tube, the mouth of which is plugged with cotton wool. Sterilisation is effected in the hot-air oven. The needle used is size 19 S.W.G., and is 2 in. long. A needle with a narrow flange on the hub, such as the "Serlon," is required. Oxalate, citrate or fluoride may be introduced into the container before it is sterilised. These outfits were found to be particularly useful when large numbers of patients had to be dealt with rapidly—for example in taking blood for Wasserman reactions from prospective blood-donors.



H. W. DALTON.
M.B. Dubl., Major R.A.M.C.

THE LANCET

LONDON: SATURDAY, JANUARY 4, 1941

SAVING ON DRUGS

THE therapeutic requirements committee of the Medical Research Council has for some months been examining our drug requirements, primarily with a view to securing economies. It has published some informative lists of essential or readily available (class A), not-so-essential (class B) and non-essential (class C) drugs, which have been duly summarised in our columns,[1] but it is doubtful whether its efforts have resulted in any worth-while economy. The Ministry of Supply does not seem to have banned the import of non-essential drugs, the Ministry of Health has taken no steps to have the N.H.I. formulary revised, and neither the Pharmacopœia Commission nor the Pharmaceutical Society has tackled the revision of the B.P. or the B.P.C. in the light of war conditions. The individual doctor, however keen to help, has been handicapped by being kept in the dark as to how far economy in drugs is a patriotic gesture and how far a real need. Moreover, the M.R.C. committee has made things more difficult for him by lumping together in group A drugs which are essential and those which are readily available. The doctor feels that he is quite capable of judging whether a drug is essential or not; he merely wants to be told clearly which he cannot have or must use sparingly, and what are the more plentiful substitutes. The present uncertainty is reflected in the article by Dr. PAPPWORTH on another page, where he has tried manfully but not always successfully to translate the committee's recommendations into practical prescriptions.

The primary responsibility for initiating action must rest with the Ministry of Health. The starting-point of any revision of formulæ must be the B.P., and it is only the ministry (into whose hands the production of the B.P. must eventually pass) which can rouse the Pharmacopœia Commission to action. The attitude of the commission has not unnaturally been to take no steps to reduce the quality of basic medicaments until it is satisfied beyond question that it must do so, and those responsible for the derivative formularies, such as the Codex and the N.H.I. formulary, have had to follow this lead whether they wanted to or not. It is therefore welcome news that Sir WILSON JAMESON, the new chief medical officer, is setting up forthwith a committee with the duty of preparing a war-time formulary. The precise terms of reference of this body are not known, but let us hope it will not allow itself to be too closely restricted in its activities. It should first invite the Ministry of Supply to forbid the import of all drugs in class C (non-essential). It should then examine class B (useful but not always essential) in consultation with that ministry to ascertain whether it would usefully help our foreign-exchange position to ban these also. It may find, for example, that tartaric acid is coming in by the hundred tons for use in the steel industry and that the diversion of an occasional ton to medicine is neither here nor there. Only after such an inquiry can the formulary committee know where it needs to make its economies, and it may well turn out that the economies necessary apply to a comparatively small range of substances and are such as cannot entirely be effected by a formulary. Alcohol, sugar, potassium salts and some fats and oils must certainly be cut down, but changes in the well-established formulæ containing these substances cannot be undertaken lightly or carried out quickly. The committee ought therefore to be free to make other recommendations to the same end. The proprietary-medicine trade provides a wide field in which rationing of supplies can be practised without loss to anyone except shareholders and the Chancellor of the Exchequer. No doubt, too, the quantity of medicine consumed by insured patients could be reduced without noticeable detriment to their health, but the insured patient will not relish being refused his familiar medicine while its proprietary equivalent can be bought at any chemist's shop. Again, great economy in alcohol can be secured by prohibiting, if need be by a defence regulation, the use of tinctures where there are equally active liquid extracts, though it will not be easy to justify such a prohibition while whisky is available for all who can afford it.

Compiling a war formulary is clearly only one line of attack on the problem. In any case, when in a month or two's time the formulary is published its use must be secured not merely by a recommendation. Much of the work of the therapeutic requirements committee has been wasted because it could do no more than advise. If the formulary is to be effective it must be backed by legal sanctions and must where necessary override the Pharmacopœia and the food and drugs legislation without regard to vested interests. This time manufacturers, wholesalers, retailers and prescribers must be left in no doubt what they have to do.

1. *Lancet*, 1940, 2, 340, 432, 472.

MOBILE TEAMS

MOBILE surgical teams are available for the treatment of special classes of war casualties. Some deal with head and spinal injuries, others with maxillo-facial injuries, others with chest injuries; there are orthopædic teams for the treatment of fractures, general surgical teams to reinforce surgical staffs at neighbouring hospitals and "shock" teams—few, but increasing in number—who undertake resuscitation. They must not be confused with mobile units, which are an element in the A.R.P. casualty service attending at air-raid incidents. Various E.M.S. hospitals distributed strategically about the country have been chosen as centres for dealing with special classes of injury and one or more mobile teams are attached to each of these. Each team consists of a surgeon and operating staff who have had special experience at the hospital in treating a given class of injury and are therefore expert beyond the ordinary in that field. Advance in the treatment of such injuries is likely to be most quickly achieved in special centres of the kind. Patients who are fit to travel can be sent to these centres; those who cannot be moved can be visited by the mobile teams at the hospitals to which they are first admitted as casualties. When summoned to treat a case outside their own hospital, members of the team are rounded up—and the Americans have generously provided cars for this purpose—and driven with their equipment to the

hospital at which the patient is waiting. Equipment usually includes only the apparatus necessary for dealing with injuries of a given type, but some surgeons prefer to take full equipment of the kind they are accustomed to using, including operating clothes and dressings. The aim is to ensure for any injured person who needs it the most skilled attention available in the country; and used properly the mobile teams should be able to save lives which would otherwise be lost.

The idea is not a new one. Travelling teams were first devised by Sir CUTHBERT WALLACE in the 1914–18 war, and HARVEY CUSHING [1] relates how he saw them used by the French in 1915. They are likely to be more valuable in a war of movement than they were in a static war; and here in England we should be able to use them to the limit of their capacity. At present various difficulties, mostly remediable by planning and goodwill, are interfering with the efficiency of the service and teams are not being fully used, or from misunderstanding of their purpose are being misused. When patients with "special" injuries—especially head and chest wounds—are admitted to hospital they are examined by the surgeon on the spot; it is for him and for the superintendent of the hospital to decide whether or not to send them to a special centre or to summon a mobile team. Some surgeons, mistakenly anxious to do their bit, and others perhaps over-confident of their ability to tackle anything, are disinclined to make use of the help available; some superintendents find it hard to believe that an outside team is likely to contribute anything to the work of their hospitals. Then the question of fitness for travel is one of opinion, and the surgeon who wants to keep his cases to himself may develop an abnormally high "fitness threshold." Such personal prejudices may endanger the welfare of the patient; the liberal-minded will set them aside once the value of the mobile team has been appreciated. Those who are willing to use the official scheme are finding that they are losing nothing by their contact with experts.

The system has been criticised because delay may occur when a team is summoned. Sometimes this could be avoided. When a superintendent decides to call a team he telephones to his sector headquarters, mentioning the injury for which help is needed. Headquarters telephones to the nearest centre dealing with the type of injury described; if this happens to be in another sector, that sector headquarters must also be notified. The regional officer is also informed and can visit the patient and direct transfer to a special centre if he thinks fit. There is ample scope for loss of time in all this. It does not seem to be generally known that a superintendent can, if need be, get into direct touch with the surgeon he wants to call and arrange for a team to come out. If the case is really urgent the team is called together at once and drives to the hospital where the patient is waiting. All these events are probably taking place during an air raid; telephones may be out of action or reserved for priority calls. Sometimes transport is not available to collect the team and its equipment, and finally when all is ready the drive must often be made in the blackout, by way of diversions, and over unknown ground. Nor is it possible to keep teams standing by at all hours of the day and night; the surgeons attached to them are on part-time service and may not be living close to their hospitals or may be engaged on other work; yet even so the surgeon, anæsthetist nurse and other special members of the team, and the equipment, are often assembled more rapidly than the transport, which also has other duties to perform. Nor is it encouraging, when all these difficulties have been successfully overcome, for the team to arrive (as one did, after a sixty-mile drive) to find that its whole function had been misunderstood, that the patient had been injured a fortnight before, and was not an urgent case at all. Some cases of head and chest injury, especially if shocked, may be unfit to wait for the mobile team to reach them; or those in charge may not have judged that a period of resuscitation—even prolonged—was preferable to early operation.

How can these practical difficulties be overcome and the best use made of this able service? First, in all except the most urgent cases the surgeon of the mobile team can set out in advance, see the patient and decide whether he can be taken to the special centre after all. If he can, so much the better; it is clearly to his advantage to be treated in the centre throughout. If not, the surgeon can then call his team who will in the meantime have been assembling. The telephone problem might be overcome by instructing the Post Office to give interhospital calls priority, by putting in interhospital field-telephones and by providing motor-cycle dispatch riders to carry messages when all else failed. The transport difficulty could be solved by having relays of cars available through the day and night. Here the Americans would probably be willing to help still further; and many owners of private cars would be glad to forego their personal transport for such a purpose—they need only be asked. It is not easy at present to increase the number of teams because so many experienced surgeons are with the forces and cannot be used in the scheme. Sir CUTHBERT WALLACE's plan of an "Imperial service"—a pool of talent from which Army, Navy, Air Force and E.M.S. could draw—had it been accepted, would have made it possible to use all our experts to better advantage. In the meantime the special centres themselves are splendid training grounds for young surgeons, who will in time be able to take their places as heads of teams.

1. From a Surgeon's Journal, 1915-18. London, 1936, p. 402.

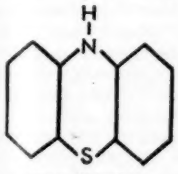
NEW WEAPON AGAINST THE THREADWORM

THE patient infected with worms (or possessed with devils) shares with royalty and editors the privilege of using the first person plural. A few enter into voluntary symbiotic relationship with their worms (tapeworms, in this case) on the understanding that the hostess shall preserve her sylph-like figure irrespective of dietetic excesses. Patients in general, however, are only too anxious to be rid of their parasites. Even though worms in the alimentary tract may cause no symptoms, their periodic appearance in the stools tends to produce depression and a sense of inferiority. So troublesome, indeed, are these minor psychological accompaniments of infestation that many doctors must have wished that their patients never looked behind them.

In this country cases of threadworm are common and tapeworms and roundworms occasionally met

with; but helminthiasis is a minor problem to the average general practitioner. Nevertheless, the majority of the human race are infested with worms;[1] and while many of these infections are relatively benign there are others—such as bilharziasis and ankylostomiasis—which exact an enormous toll in terms of human morbidity. It is estimated that 500 million people suffer from hookworm disease, and workers who report on new remedies usually base their conclusions on thousands or even hundreds of thousands of cases. Even primitive man had a propensity for discovering suitable remedies for worm infestation. These vegetable drugs were employed empirically, and probably the bulk of them were useless; but the valuable ones were handed down to later civilisation. THEOPHRASTUS in the fourth century B.C. thought highly of male fern. *Artemisia anthelminthicum*, from which we obtain santonin, was well known to the Greeks and Romans and was freely employed therapeutically by the Arabian physicians of the Middle Ages.[2] In his de Lamar lectures (1927–28), M. C. HALL made a notable contribution to the study and evaluation of anthelminthics, and during the past decade much work has been done with the objects of evaluating existing remedies and synthesising new drugs. Anthelminthics synthesised for use in this country have, with few exceptions, been intended for the treatment of threadworm infection. Sir ROBERT HUTCHISON regards the presence of threadworms not as a disease per se but as a pointer to an unhealthy state of the bowel characterised by excessive secretion of mucus, and recommends that the amount of carbohydrate in the diet should be reduced. Thereafter the mere mechanical removal of the worms from the lower bowel by means of simple enemata usually suffices if care is taken to prevent reinfection. Adults, on the other hand, often prove intractable, and not infrequently they run through the whole list of treatments, from simple enemata to quassia, turpentine, hexylresorcinol and Butolan, and may suffer the final indignity of an appendicostomy for colonic lavage. This wide choice of therapeutic agents speaks for itself; a completely satisfactory anthelminthic for threadworm infection has still to be found.

The latest drug to be recommended for this condition is phenothiazine. Prepared by BERNTHSEN nearly half a century ago, it has been on the shelf until recently; but it can claim distant relationship with sulphanilamide, and perhaps this prompted pharmacologists to take it down and have another look at it. It thus has an unimpeachable pedigree, and can also boast several therapeutic feathers in its cap. In 1935, SMITH, MUNGER, and SIEGLER[3] showed that it is a powerful insecticide likely to prove of first importance in agriculture; DE EDS and his colleagues[4] have demonstrated that phenothiazine is a valuable urinary antiseptic; in veterinary practice it has established itself as an anthelminthic for cattle, sheep, swine and horses, with a low toxicity for the host. Trials are now being made on man. Opportunities to test its effects on the different kinds of helminthiasis are happily limited in England; the series reported by Dr. MANSON-BAHR in THE LANCET of Dec. 28 is thus necessarily small, but this is offset by the fact that many of the patients had multiple infections. It appears that worms in the small intestine are unaffected by the drug. But if phenothiazine acts as a urinary antiseptic only in an acid urine, it may yet be found to act more successfully as an anthelminthic in the small bowel if measures are taken to lower the pH of the intestinal contents during treatment. On existing evidence, however, phenothiazine does not improve on existing remedies against hookworm disease. Similarly, little is to be expected from it in whipworm infections. MANSON-BAHR'S experience of the drug as a remedy against threadworms is more promising. The ideal anthelminthic would be one which, given by mouth for a few days, would completely eliminate the parasites. In threadworm infection, however, it is not enough to say that a new drug clears up the ordinary case; the real question is whether it will cure cases proved resistant to the measures in common use. Only further experience will decide whether this can be said of phenothiazine.



Phenothiazine.

1. Clark, A. J., Applied Pharmacology, London, 1940, p. 353.
2. Findlay, G. M., Recent Advances in Chemotherapy, London, 1939, p. 10.
3. Smith, L. E., Munger, F. G. and Siegler, E. H. *J. econ. Ent.* 1935, **28**, 727.
4. De Eds, F., Stockton, A. B. and Thomas, J. O. *J. Pharmacol.* 1939, **65**, 353.

Annotations

TRICHOMONAS VAGINALIS

ALTHOUGH the discovery of the *Trichomonas vaginalis* by Donné is more than 100 years old and its activities have been investigated extensively by French, German and American workers, it is only within the past decade or so that this protozoon has come into the limelight here as the cause of an acute and sometimes intractable vaginitis. Its pathogenic powers seem undoubted although it may sometimes be latently present in the vagina, and it flourishes only when conditions are specially suitable. Hibbert has even suggested that it requires the symbiotic help of a non-hæmolytic streptococcus before it can initiate infection. However that may be, it is important for the gynæcologist to diagnose trichomonas vaginitis, and if the clinical features are often highly suggestive laboratory aid is needed to clinch the diagnosis. The distinctive characters of *T. vaginalis*, the conditions which favour its growth in the vagina, and the laboratory methods in use for its recognition have lately been reviewed by Liston.[1] Four human varieties of trichomonads are described, and a study of both morphological and physiological differences is needed for their differentiation. *T. buccalis* is probably a harmless saprophyte of the mouth although it has been isolated from patients with congested throats or carious teeth; *T. vaginalis* morphologically resembles the mouth protozoon but grows outside the body only at 37° C. whereas the mouth strain grows at room temperature; *T. hominis* is an intestinal inhabitant and is difficult to distinguish from *T. arden-delteili* which is to be found in the rectum of about 1% of human beings. Whether all these trichomonads are in fact distinct entities is a matter of doubt for Dobbell has been able to establish a trichomonad isolated from monkey intestine in his own gut and in the monkey vagina. Trichomonads flourish in the vagina only during the female reproductive period, for children before puberty are never infested and women after the menopause seldom suffer from trichomonas vaginitis. Glycogen is abundantly

1. Liston, W. G., *Brit. J. vener. Dis.* 1940, **16**, 113.

present in the vaginal epithelium of healthy adult women, and according to Liston is an important factor in favouring the growth of the trichomonas, either by supplying food (glycogen can be demonstrated inside the protozoa) or by presenting a suitably acid environment for growth. The optimum pH for proliferation of *T. vaginalis* seems to be between 5 and 6, although the acidity in the healthy vagina is considerably higher (pH 3·8–4·2) and this latter reaction is usually reached when the trichomonas infection is eliminated by proper treatment. Infection probably develops when local or general ill-health upsets the normally high acidity in the vagina—for example, trichomonas vaginitis is a not uncommon sequel to a gonorrhœal infection, while it often recurs after a menstrual period when vaginal epithelium is shed and the reaction of the secretion is more alkaline. The infection must in most instances be endogenous in origin for it occurs in virgins [2] and is a much more common affliction of the female than of the male in whom it rarely causes urethritis (cf. Liston and Lees [3]).

For clinical and laboratory diagnosis the patient must be in the lithotomy position, so that the genital tract can be examined in a good light with a bivalve speculum. It is desirable that some of the discharge be collected in a container rather than on a swab for microscopic examination. Cruickshank and Sharman used a long-handled shallow spoon; Liston recommends a special vaginal pipette which mixes some of the discharge with saline and aspirates it into a glass bulb. The frothy non-mucoid greyish-yellow nature of the discharge is often characteristic while the pH, tested with the B.D.H. capillator, is usually between 5 and 6. The discharge may now be examined microscopically with a high-power dry lens, and preferably warmed up if there has been a delay of more than an hour since the specimen was taken. The jerky counter-clockwise movement of the trichomonads and the active lashing of their flagella—often noted when other movements have ceased—are diagnostic. If a drop of Lugol's iodine is added it will be seen that there is a deficiency of glycogen in the epithelial cells, another feature of trichomonas infection. Films of the discharge should be stained by Gram's method for gonococci and the thrush fungus, and also with Leishman's stain, which Liston claims is a useful method for demonstrating the trichomonads, although most workers find them difficult to stain in fixed preparations.

PRISONERS OF WAR

As soon as a war breaks out the International Red Cross Committee at Geneva sends delegates to report on conditions, to inspect prisoners of war and interned civilians in camps, and to act as liaison officers between the warring country and Geneva. The international delegate to Great Britain at present is Monsieur R. A. Haccius, to Canada Monsieur Maag, to Egypt Monsieur Vaucher, to Greece Monsieur R. Brunel, to Italy Monsieur de Pourtales, to unoccupied France Dr. Cramer, and to Germany and occupied territories Dr. Marcel Junod, Dr. R. Marti, Dr. P. Descœudres and Dr. Exchaquet. A delegate is to be sent to Kenya, and Colonel Iselin has gone to Lisbon to supervise the sending of food and parcels to prisoners of war. All the delegates are Swiss. The first news they send of British prisoners in occupied France is reassuring. Dr. Junod and Dr. Marti have seen prisoners at Brussels, Malines, Ghent, Enghien, Paris and St. Denis. They are well treated, fed as well as the wounded Germans, who in some cases share the same hospitals, and chiefly lack news, soap and socks. The telegrams sent by the delegates, via Geneva, to the British Red Cross tell much the same stories of life at the various prison camps. At Brussels there are 17 wounded privates receiving excellent treatment by German specialists. At Malines 70 slightly wounded N.C.O.s are treated by English Army doctors, the food is good and the men are satisfied. In a military hospital at Ghent over 200 men are under the care of their own doctors; recovered men sent to German camps each receive a double set of underclothing from the Belgian Red Cross. At Enghien, where there are over 450 wounded, there are 24 British Army doctors and 4 chaplains; care is said to be good and each man receives daily a ration of vegetables and potatoes, bread 200 g., meat 50 g., fats 50 g. They are described, like those in many other prisons, as "suffering for want of news." Most of the men have been allowed to write home. At a big camp for civil interned at St. Denis, food is adequate and the prisoners receive visits from relatives twice a month. There is good sanitation, hot showers are available and the hospital has 7 British doctors and dentists on its staff. Dr. Junod obtained for these prisoners authority to correspond with England through the postal scheme of the International Red Cross, via the German Red Cross. Dr. Marti has visited various camps for the R.A.F. At one of these 231 N.C.O.s and 57 privates are housed comfortably in wooden barracks with a heating plant. The food is good and the prisoners are satisfied but need mittens and socks. The canteen sells fresh vegetables, beer and cigarettes. The men work in labour detachments and are paid 20·8 marks a month. Their correspondence arrives, though irregularly, and they would like to be allowed personal parcels. At a camp for 126 officers, the prisoners need underclothing and books but are otherwise comfortable, and at another there are easy chairs and whisky every evening; in this last one, Dr. Marti records, there are no complaints. The whole report is encouraging and should help to allay the anxiety of relatives at home.

2. Cruickshank, R. and Sharman, A. *J. Obstet. Gynæc.* 1934, **41**, 369.
3. Liston and Lees, R. *Brit. J. vener. Dis.* 1940, **16**, 34.

SMOKING AND CORONARY DISEASE

WE are all prepared to lay down the law as to the ill effects of the addictions of other civilisations—hashish, opium or whatever it may be—but when it comes to our own addictions—tobacco and alcohol—there is not the same unanimity of opinion. Dilling [1] in his textbook says that "excessive use of tobacco may lead to weakness and irregularity of the heart and pulse," but where does excess begin? Willius and his colleagues,[2] who have access to the unrivalled records of the Mayo Clinic, have tried to clarify the position by investigating the rôle of tobacco in the ætiology of coronary disease. Selecting at random the records of 1000 males aged 40 and upwards with coronary disease as shown by a diagnosis of recurrent angina pectoris, healed, recent or acute cardiac infarction, they noted whether the patient was a smoker or not, and if so to what extent, though they do not explain the basis of their four groups. The vast majority of those who smoked were apparently cigarette smokers. Their controls consisted of 1000 men of the same age-group with no evidence of coronary disease. Of the patients with coronary disease 69·8% were smokers, compared with 66·3% in the controls—not a statistically significant difference. In men between 40 and 49, however, 79·7% of those with coronary disease were smokers compared with 61·9% of the controls—a significant but hardly striking difference. As a further check they noted the incidence of coronary disease in 1000 male smokers and 1000 male non-smokers aged 40 and over. Again there was no significant difference between the two groups considered as a whole, the incidence being 5·4% in smokers and 3·8% in non-smokers; but in the 40–49 age-group the smokers' incidence was 4·8% compared with only 1% in the controls, and the incidence went up to 5·9% in heavy smokers. It was concluded

1. Dilling, W. J. The Pharmacology and Therapeutics of the Materia Medica, London, 1939.
2. English, J. P., Willius, F. A. and Berkson, J. *J. Amer. med. Ass.* Oct. 19, 1940, p. 1327.

that smoking probably has a more profound effect on younger men and may lead to the development of coronary disease at an earlier age, but even this cautious conclusion was heavily assailed in the discussion of the paper. Dr. Soma Weiss, among others, pointed out that the hard-working man who is predisposed to coronary disease is the type of person who would also smoke. There are, in fact, so many factors involved in the ætiology of coronary disease that it is unjustifiable to dogmatise about any one of them. A more valuable approach to the subject might be through the study of sensitivity to nicotine. Healthy students, according to Lampson,[3] show an average rise of 12–15 mm. Hg in systolic blood-pressure after inhaling tobacco smoke, but the blood-pressure of a man of 57 reported by Herrell[4] rose on smoking a cigarette from 118/70 to 180/110 mm. It would be worth while looking for such susceptibility in patients whose attacks of angina are precipitated by smoking, though whatever the findings the advice to give it up would probably be equally emphatic.

THE SCOPE OF OCCUPATIONAL THERAPY

THOSE in charge of the sick have always known that the patients who do not fret and whose minds are restfully occupied on some subject which they enjoy get well quickest. Most doctors see that their patients have something to do as soon as convalescence begins, but although they regard this as important the occupation chosen is often haphazard; the patient is given a book or the nurse is advised to "get her to do some knitting." Enlightened heads of the asylums went much farther when they began to keep patients occupied, and the "work cure" came into being. During the 1914–18 war one of the Canadian hospitals in France applied the method to wounded and sick soldiers, and the term "occupational therapy" was invented. From the day on which the patient is able to undertake the smallest activity, mental or physical, the occupational therapist can help him to work for his own recovery and to concentrate on his occupation, not his disability. Schools of occupational therapy are running in England, and many doctors are interested in the subject, but until recently no textbook has been available for the use of students, nurses and others engaged in the work; Dr. Norah Haworth and Miss E. M. MacDonald have now written a concentrated and readable one.[5] Dr. Haworth has had long experience among mental patients and in the application of occupational therapy. Miss MacDonald, herself an occupational therapist, has trained students for the work. The chapters on mental disorders cover some of the ground of Dr. J. I. Russell's "Occupational Treatment of Mental Illness," but give in much more detail the application of various crafts to individual illnesses. In America nearly all occupational treatment is carried out by trained therapists. In Europe the Dutch method is followed: the medical officer is expected to have the knowledge which in America is largely the province of the occupational therapist, and he gives his instructions directly to the nursing staff, who are trained to carry them out. In England, following the recommendation of the Board of Control, the professional occupational therapist usually receives the prescriptions and instructions from the doctor for each patient, decides on the work and starts the patient on it, and then delegates supervision to a nurse whom she trains to carry out her instructions. The new handbook has an excellent chapter for such nurses, giving the details of leather work and simple crafts. In the chapters on orthopædic and surgical cases each disability is tabulated and occupations are suggested to suit each joint or nerve lesion; specimen prescription forms, progress and result reports are included to help the student to present her records in a convenient form to the surgeon. The occupational therapist has an important part to play in the treatment of war casualties, and the Ministry of Health has decided that occupational therapy shall be provided at many centres. Trained personnel is scarce at present so that the medical officer will welcome the tabulated details of apparatus and equipment and the scheme for passing each patient through stages of gradually increasing muscular effort, while sustaining and augmenting his interest in what he is making. The curative workshop at Allendale, Clifton Down, Bristol, has proved its value in the treatment of patients who can leave the ward for a part of each day. To provide such treatment, however, is beyond the scope of the amateur, as Miss MacDonald points out.. It is essential that the therapist should know something of the structure of the muscles and joints she is to treat, and of the ways in which disease may affect them. The book makes no attempt to cover this ground, the writers assuming that the student has already acquired the necessary knowledge of anatomy and physiology. The book will be suitable for those masseuses who are now in training as occupational therapists for war-work in hospitals, and for whom the Association of Occupational Therapists has authorised a shortened course and a special syllabus and examinations. Their knowledge and experience in treating fractures and other disabilities will make them, when trained in occupational therapy, particularly valuable to the orthopædic surgeon.

3. Lampson, R. S. *Ibid*, 1935, **104**, 1963.
4. Herrell, W. E. *Proc. Mayo Clin.* 1938, **13**, 1.
5. The Theory of Occupational Therapy. London: Ballière, Tindall & Cox. Pp. 131. 6s.

THE SEX-RATIO AT BIRTH

THAT male live births slightly but invariably exceed the female is an old observation. In the vital statistical history of England and Wales of the last hundred years, for instance, there have in any year never been less than 1032 male births to 1000 female, and never more than 1060. The normal annual ratio is now 1040–45 : 1000, and according to the studies of the old London bills of mortality and the records of Burke's Peerage made by W. T. Russell,[1] this figure is distinctly lower than the levels prevailing in previous times. No explanation for this change is available, but it is well known that periods of social upheaval tend to increase the proportion of male births and the record value of 1060 for England and Wales was registered in 1919. An increased masculinity was, in fact, a characteristic of the post-war years in both warring and neutral countries. One factor here may be the postponement of marriages and a subsequent rise in the proportion of first-born children, for Russell finds the highest male : female ratio in these and a decline with increasing size of family. This, too, may clearly have a bearing on the observed decreasing masculinity as one passes down the social scale, while differences in abortion-rates, believed to affect the male more than the female, may explain the higher index in rural communities, compared with urban. Many factors, it seems, may affect the ratio and yet another has been added to the list by Philip S. Lawrence, of the department of biology of the School of Hygiene and Public Health, Johns Hopkins University.[2] Using the department's family-history records he demonstrates an increasing proportion of male births with the length of life of the parents, and especially the mother. For instance, taking broad groups, when both parents died at under seventy years 46·7% of the children and 50·4% of the grandchildren were males; when both parents died at over seventy the corresponding percentages were 52·4 and 52·3. These differences argue strongly, Lawrence suggests, for the existence of an element of biological fitness in sex-ratio determination. The innate constitutional vitality of parents may first be a factor in determining the primary sex-ratio—i.e., at conception—and secondly, and perhaps more probably,

1. *J. Hyg. Camb.* 1940, **36**, 381.
2. *Human Biol.* 1940, **12**, 403.

may influence the frequency of reproductive wastage so that more males are brought to term. Unlike Russell, he finds, however, no association between the sex-ratio and size of family. Turning from family histories to the much used, or ill-used, *Drosophila melanogaster*, he finds a similar relationship between the sex-ratio of the offspring and the powers of survival of the parents. With constant environmental conditions it seems that those flies, and particularly the mothers, which possessed the greater innate biological fitness had a tendency to produce a higher proportion of male progeny. Matings in the milk-bottle thus confirm the observations of mankind.

MILITARY MEDICINE

IT is natural, when most doctors are either on war service or concerned with the results of the air war on civilians, that there should be an increasing demand for papers on all aspects of war medicine. American doctors, though not directly involved, are aware of the virtue of military preparedness, and for their information the Medical Library Association has begun to publish a column on military medicine in each issue of its quarterly *Bulletin*.[1] This is not an abstract of current periodicals, such as the Medical Research Council is giving us in its new *Bulletin of War Medicine*, but a survey of publications on military medicine with a commentary. It is designed as a guide for the librarian who caters for the medical public, but it should prove equally valuable to all users of medical libraries. Our own librarians, preoccupied with safeguarding their collections from the dangers of air-raids, will probably read as a counsel of perfection the association's advice that "every library should set aside a section of its main reading-room for military medicine, where the doctor should find books old and new, publications from World War I, current military journals, reference lists of important advances in military medicine, in the care of civilians under war conditions, aviation medicine, gas warfare . . ." and so on. The association leads the way by printing a list of thirty-three current periodicals of military medicine. Half of these, however, come from enemy or occupied countries and must be almost as difficult to obtain in America as here. The association also describes the steps being taken by the National Research Council in Washington to collect all relevant material for compiling the medical history of the present world upset as it affects America. We may hope that here in the centre of the battle someone has had the foresight to begin a similar collection.

DUST IN THE LUNGS

MOST experiments on the dusting of lungs have been devised for the purpose of testing the toxicity of different dusts, either on the lungs themselves as with silica, or on some other part or parts of the body, the lung being the avenue of absorption, as in the case of lead fumes. Barclay and his associates[2,3] at the Nuffield Institute for Medical Research at Oxford have tested the extent to which certain radio-opaque dusts penetrate the lungs and the time they remain there. The dusts used were powdered lead glass, bismuth carbonate and carbon black, and their particle size was of the order of that encountered in industrial dusts. The amount of dust seen in the trachea, bronchi and bronchioles varied considerably with the type of dust used and with the method of administration—insufflation, normal inhalation and "gasping inhalation." But in the alveoli very similar quantities of dust were found histologically, even when the amounts in the bronchi and bronchioles differed greatly. Thus the radiographic appearance of the tubular system was no guide to the alveolar condition. Since one of the objects of the research was to investigate means for grading dusts according to the degree of their penetration into the alveoli, it seems that the radiographic method has definite limitations for this purpose and that assessment of the amount of dust histologically must continue to be the criterion of how much penetrates to the areas where it may be most harmful. And since the elimination of dust from the bronchi and bronchioles appears to be fairly rapid, it also seems that the time-honoured procedure of chemical analysis will continue to be the favoured method of obtaining information about the concentration of harmful material in lungs obtained at autopsy. The elimination of dust particles from the alveoli was observed in these experiments as in those of Carleton.[4] According to Barclay the alveolar dust cells with their load of ingested particles move towards the ciliated epithelium of the bronchioles, are caught up on the layer of viscid mucus, and are carried up with it by the cilia to be expectorated or swallowed; he does not believe that the movement of dust-laden cells along the lymph passages into the glands is of any importance as a route of excretion in healthy animals. This view is in direct conflict with the findings of King and Belt,[5] who demonstrated accumulation of siliceous particles in the peri-bronchial lymph-glands of healthy people and even in babies and young children. Both routes of elimination of dust are certainly at work in the human, and Barclay's failure to find radio-opaque material in the glands of animals probably means that his experiments were of too short a duration to allow a sufficient accumulation of particles to take place. Radiographic observations on the fate of dusts residing in the lungs for long periods should yield useful information and it is to be hoped that the Oxford investigations will be extended in this direction.

THE WAR ON RHEUMATISM

RHEUMATISM, no respecter of persons, falls alike on the soldier and the civilian. The Empire Rheumatism Council, now presenting its fourth annual report, maintains steady progress in the attack on this most disabling of common ailments. Since war broke out the council has taken every opportunity to serve the defence forces. Its Naval research foundation has continued work at the emergency station of the Royal Naval medical school. The R.A.F. has asked for help in planning treatment of rheumatic cases, and the Australian Army has also been advised. The council seeks the establishment of specialised military hospitals for the treatment of rheumatic ailments and the late results of wounds. The same equipment can be applied to the physical treatment of rheumatism and to the rehabilitation of injured joints, muscles and nerves. Lieut.-Colonel W. S. C. Copeman, honorary secretary to the council, established a rheumatism ward at one of the base hospitals in France and planned that a special rheumatism hospital should be set up in time. This scheme, of course, fell through, but he was able during the months before the withdrawal of our Army to show how physical-treatment apparatus can be contrived from improvised materials.[6] Lord Horder, in his report as chairman, says that most of the research tasks undertaken by the council have been carried on in spite of the war. The work of one of the Sir Alexander Maclean laboratories was suspended last year, but the other carried on until October, when it was hit by a bomb. Sir Alexander has permitted the funds to be diverted to the council's work for the defence services. Dr. E. G. L. Bywaters's research on rheumatism at the British Postgraduate Medical School was interrupted in September, when he began an investigation of shock. Work on rheumatism has gone on at the Cambridge School of Biochemistry, in the rheumatism department of the West

1. *Bulletin of the Medical Library Association*, 8, The Fenway, Boston, Mass.
2. Barclay, A. E., Franklin, K. J. and Macbeth, R. G. *Amer. J. Roentgenol.* 1938, **39**, 673; *Brit. J. Radiol*, 1938, **11**, 405.
3. Barclay, Franklin and Prichard, M.M.L. *Brit. J. Radiol.* 1940, **13**, 410.
4. Carleton, H. M. *Proc. roy. Soc. B.* 1934, **114**, 513.
5. King, E. J. and Belt, T. H. *J. Path. Bact.* 1940, **51**, 269.
6. *Jour. R. Army med. Cps.* 1940, **74**, 277.

London Hospital, and at the Hospital of St. John and St. Elizabeth, where a department for clinical research into occupational therapy for arthritis is proving its value. At the West London it has been noted that some cases of arthritis benefit more as outpatients than as inpatients; as inpatients they become too reliant on their beds. The British Red Cross Clinic for rheumatism, which was closed last winter, reopened in February, 1940, and was quickly filled up at every session. Colonel Copeman's experience in France showed, Lord Horder feels, that it will not be vastly expensive to grapple with rheumatism on a national scale. The council's plans for a national scheme of treatment are almost ready for publication.

Special Articles

GENERAL PRACTITIONERS AND A.R.P. SERVICES

A SCHEME by which each doctor can help in his own district, or be called out quickly by those who first find casualties, is an essential part of our A.R.P. services, and last May the Ministry of Health suggested [1] that medical officers of health should have readily accessible lists of general practitioners in their area not already attached to first-aid posts, classified according to the localities where they practise. Early in June Dr. J. Greenwood Wilson, M.O.H. for Cardiff, his deputy, Dr. W. Powell Phillips, and his assistant, Dr. Cecil Anderson, carried this suggestion to its logical conclusion. They circularised all members of the medical profession to find out who would be willing to help and then mobilised all the available doctors not already attached to first-aid posts to help with casualties in their own district. The idea is an extension of the peace-time custom by which a doctor is called from his house or surgery to attend an accident nearby.

The wardens or police are usually first on the scene when a bomb falls, and their duty is to report what has happened and whether or not there are casualties. The appropriate services are sent from a depot which is often some distance away. In Cardiff, wardens or police send in their reports in the normal manner, but they know that if they need a doctor all they have to do is to summon the practitioner who normally practises in the district. This gives the wardens at the periphery a medical service which can be called on immediately and which is not likely to be delayed by breakdown in telephone or messenger service. The doctor knows the neighbourhood, and his presence where there are casualties gives everyone a feeling of confidence, which is especially important if there is any delay in the arrival of the other services. Doctors so called on receive payment by the appropriate sessional fee, which is the same as that paid to doctors at first-aid posts. Each doctor who enrols is handed a letter giving details of the casualty services in the city, making some suggestions for the doctor's guidance in coöperating with the A.R.P. services. These include the following:—

(*a*) At the site of an occurrence representatives of the various A.R.P. services will be present. By linking up with these services the doctor can be of great assistance in the satisfactory handling of the incident. Most of the wardens have a knowledge of simple first-aid and may be relied upon to assist in directing or accompanying minor walking casualties to the nearest first-aid post. Their knowledge of the report and control centre systems can be used for transmission of messages. It is suggested that doctors, if they have not already done so, might with mutual advantage arrange to meet the wardens of the posts to which they have been allocated and discuss the line of action which they will adopt in the event of a call for their help being received.

(*b*) When a doctor is called to an incident he can do most useful work in sorting cases, sending as many as possible of the lightly wounded and shocked patients to first-aid posts, thereby making it easier for the hospitals to deal with the more serious cases.

(*c*) When the first-aid parties arrive, the doctor can be most useful in indicating those cases which should receive prior attention and be despatched to hospitals and those which can be adequately dealt with at first-aid posts. The first-aid parties are instructed that they shall in every case carry out any instructions which may be given by a doctor on the spot.

(*d*) The doctor may find that too many ambulances and first-aid parties have arrived, and it would be of great help if he would immediately instruct leaders of any excess of first-aid parties and ambulances to return to their respective depots, as in all possibility they will be required at some other point.

(*e*) In order to provide a doctor with some equipment for the actual treatment of casualties a haversack which contains the following items of equipment will be issued:—

5 spools 1 in. × 5 yd. adhesive plaster.	1 angular joint.
2 packets (6 yd.) gauze.	4 straight joints.
12 safety-pins.	1 sheet 24 in. × 18 in. gooch splinting.
8 medium mines dressings.	1 Samway tourniquet.
2 large mines dressings.	1 gooch saw.
1 packet field-dressing.	1 skin pencil.
2 oz. sal volatile in case.	6 bandages 2 in.
1 graduated measure.	2 doz. triangular bandages.
2 × ¼ lb. cotton wool.	1 × 25 c.cm. bottle morphia (strength 1 c.cm. contains gr. ½ morphia).
1 set sectional splints (4 short and 7 long).	

It is hoped that each doctor will provide his own hypodermic syringe for giving morphia. The dermatograph pencil is issued so that the doctor may give the hospital or aid-post essential information by marks on the patient's forehead. The signs used are: M, morphia; T, tourniquet; H, hæmorrhage; X, trunk wound or perforated wound of chest; C, gas contamination.

If there is delay in arrival of the ambulance serious casualties, with the assistance of the wardens, should be temporarily placed under cover in any house or building near the site of the occurrence which is not too badly damaged.

Each doctor is thus supplied with simple first-aid equipment. This has been kept down to a minimum and only essentials are provided. There are several items which, in the light of further experience, may be included in the equipment and others which may prove unnecessary. Steel helmets and service respirators have been issued to all doctors coöperating, and it is proposed to have the helmet painted white with the word "Doctor" in black letters.

This method of using all available doctors in a district, not only those specifically appointed to first-aid posts, offers great advantage in a major air-raid, and experience shows that it gives the wardens a great deal of confidence while each doctor feels that he is being usefully employed in the A.R.P. casualty service. The scheme has proved its efficiency under raid conditions.

1. Ministry of Health Circular E.M.S. 1, 158.

SHELTER HEALTH

A NEW white paper (Cmd. 6245, 1*d*.) sets out further recommendations of the Horder committee on conditions in air-raid shelters, and the actions taken by the Government to implement them. People with open tuberculosis who are known to frequent shelters are to be sent at once to hospital and the necessary powers have been obtained to compel them to go. As far as possible each tuberculous family is to have a family shelter and should have priority in the issue of Anderson or other shelters. Local authorities and medical officers of health have been urged by the Government to take action along these lines.

Verminous infestation of shelters is being attacked from several sides. The Ministry of Health has arranged short courses for shelter wardens at the London School of Hygiene and is issuing to them a pamphlet giving the life history of the louse, the flea and the bed-bug, and summarising simple methods of dealing with these pests. Insecticides recommended by the committee have been ordered in bulk and instructions for use based on the results of trials are to be issued; the committee suggests that these should be published as leaflets for the guidance of wardens acting under medical supervision. Compulsory powers to de-louse have been obtained. Medical officers of health are reviewing the cleansing facilities in their areas, and where these are inadequate the Ministry of Health will reimburse the local authorities for making additional provision. The incidence of infestation is to be investigated as soon as

methods and technique have been developed. To forestall bug infestation, it is recommended that bunks and other fittings should be made with as few cracks and crevices as possible. The committee advise that all internal walls should be painted with impermeable paint. When a shelter becomes infested the committee recommend an organised system of cleaning and scrubbing and the liberal use of soap and water containing cresol. A painter's blow-lamp, applied to cracks, is a simple method of dealing with small infestations. Instructions on bug infestation are about to be issued to local authorities.

The committee consider that it should not be necessary to use chemicals in latrines which are being flushed or emptied regularly, and suggest economy here.

The Horder committee submitted the question of masks to a small committee appointed for the purpose, on which two members of the Medical Research Council were co-opted. Studies were made and are continuing. The Horder committee, approving the principle of masks to reduce droplet infection, suggest that cellulose acetate (cellophane) masks should be provided, 5½ in. square, supplied with an elastic cord support. Lest the provision of these should be delayed they suggest that gauze masks made from four layers of muslin of at least 44 threads to the inch should also be ordered. They also mention favourably the yashmak type of mask which some people prefer and which is being placed on the market by commercial firms. The Government has ordered supplies of the cellophane and gauze masks, and plans have been made for the rapid provision of further supplies if the need becomes urgent. A memorandum has also been prepared for the information of medical officers of health concerning the use of masks, and a leaflet which will be distributed to shelter users when occasion arises.

Evidence placed before the committee on the prophylactic effects of medicated lozenges, gargles and throat-sprays has not convinced them that there are good grounds for using such measures to prevent the spread of infection in shelters, and they do not recommend that they shall be included in the list of drugs supplied to shelters. They have no wish, however, to discourage the use of these methods by people who feel they derive benefit from them.

The committee advise that smoking should be prohibited in public shelters except where a separate smoking compartment can be arranged. The Public Shelter Rules made under the Defence (General) Regulations, 1939, make it possible for smoking to be prohibited or controlled according to circumstances. The committee are sponsoring controlled experiments with chemotherapeutic drugs used as nose and throat sprays under medical supervision.

SCOTLAND

A REGIONAL HOSPITAL AUTHORITY?

ON Dec. 18 in an address to the Royal Philosophical Society of Glasgow, Prof. C. F. W. Illingworth, regius professor of surgery in the university, said that the past two decades had seen a great change in the scope and character of hospital work. The voluntary hospitals retained their traditional basis as charitable institutions but were now available to all sections of the community; the municipal hospitals, shaking off the stigma of the poor law, provided an efficient service for the treatment of every form of disease; and since the war yet a third hospital system had been established by the Department of Health. If these services were to be adapted to modern needs they must be coördinated. The voluntary hospitals were hampered by financial stringencies which would become more severe. They had been criticised because they admitted only urgent and acute cases and did not contribute to the vast problem of the chronic sick, for whom the municipal hospitals must provide accommodation. The voluntary hospitals had failed to make provision for the large body of wage-earners and middle-class patients who did not ask for charity but were forced to obtain treatment in hospitals because nursing homes were beyond their means. The municipal hospitals had achieved a high standard of efficiency. Though in Scotland owing to a difference in the wording of the Local Government Act, 1929, they had not yet progressed as far as in England.

Professor Illingworth made a plea for a wide reörganisation to provide a service by which patients of all classes might obtain speedy admission to the hospital appropriate to their needs. There must be free treatment for those in need, but those who could should be enabled to contribute to their own maintenance. The coördinating authority should control the whole of the south-west of Scotland and the scheme must include provision for convalescent treatment, aftercare, and social service. The first aim should be a uniform system of admission to hospital to overcome the glaring anomaly that the poorest of the poor admitted to municipal hospitals must pay for their maintenance even to sacrificing their old-age pensions, while patients earning good wages were treated free. The ideal would be a combination of the almoner system with a wide scheme of contributary insurance such as had been so successful in Birmingham. The regional authority should accept responsibility for the standard of medical and surgical work by appointing the hospital staffs, and the staff should be adequately remunerated to end the present Robin Hood system whereby consultants treated nine-tenths of their patients at the expense of the remaining tenth.

BEDS FOR SUB-ACUTE CASES

Edinburgh Royal Infirmary has taken a practical step to solve the problem of the shortage of hospital accommodation. One of the spare wards of 25 beds is reopening for the treatment of one type of case only—patients who are not acutely ill but who are unfit for work and have at present little prospect of early admission to hospital. The additional work is to be shared among the surgical staff. It is hoped to treat some 50 patients a month which would clear the waiting-list of these patients in 12 months. Since new cases will present themselves during this time, consultation is going on with the Department of Health with a view to transferring patients from the infirmary waiting-list to vacant accommodation in the new base hospitals of the E.M.S. These patients can always be quickly removed and their beds freed for urgent cases if the need arises.

DIPHTHERIA IMMUNISATION IN EDINBURGH

The campaign for the immunisation of Edinburgh children proceeds apace, so much so that the response has been greater than the authorities had prepared for and there has been a shortage of toxoid. The bulk packing suitable for use in clinics and at first-aid posts, where many children are injected by day, has been almost continuously available, but because of shortage of the small packings private practitioners have had to set up waiting lists. At the end of the second week of the campaign the total attendances were 14,068—2307 at child-welfare centres, 2435 at schools, and 9326 at first-aid posts. In addition, 730 second injections have been given at child-welfare centres and schools. These figures are exclusive of the children treated privately and a considerable number of adults have also taken advantage of the opportunity of immunisation.

JAMES MACKENZIE INSTITUTE FOR CLINICAL RESEARCH

In his annual report of the James Mackenzie Institute for Clinical Research, St. Andrews, Prof. David Waterston said that every effort had been made to carry on the work of the institute as in pre-war days. This had been possible in the children's department, in the laboratories, and in the X-ray department. During the year 79 new cases and 682 additional notes had been added to the files. Over 450 films had been exposed in the X-ray department and 472 examinations made in the laboratories. Since the issue of the last report 154 donors had had their blood typed under the blood-transfusion service, and 46 clinics had been held in the children's department, the total attendances being 674, of which 359 were between two and five years of age and 315 over five. A voluntary medical inspection of students at the university had been carried out by Dr. R. V. C. Ash. Professor Waterston said that the financial position of the institute had never been more serious. In order to meet ordinary expenditure it had been necessary to realise investments with a consequent loss of interest, and the council appealed for all the financial help possible to enable the institute to carry on.

In England Now

A Running Commentary by Peripatetic Correspondents

ONCE we worked
On a hopeful plan.
Believing that the study
Of mankind was man.
Something happened
To change the scene
(That was back
In the year '14).
Every seven years,
The grandmothers say,
All that you were
Will drop away.
Every seven years
You start anew
With a nice clean slate—
And about time too.
Seven long years
And twenty more
Till '41
Comes in at the door.

Twenty-seven years
Since we changed for the worse—
And the year '14
Goes into reverse.
It's rare to synchronise
Lip and cup,
But suppose '41
Could keep it up ?
War broke out
In the year '14,
And precious little peace
We've had between.
I admit that grounds
For the hope are thin,
But suppose, this year,
That peace broke in ?

* * *

A nursery school migrated from London to one of the larger homes of England looks oddly Lilliputian. Two-year-olds scattered in the corners of immense and lofty rooms seemed like mice, and their tables and chairs could have come out of a doll's house. They were gracefully indifferent to their surroundings except in the bathrooms where tiles of birds and beasts and Chinese gentlemen captivated them and evoked candid opinions. It was odd to see them sprawling at play in damask-hung rooms, to turn a corner and find them staring at the horse in a famous picture, or to meet one sidling down an enormous staircase where a king had slipped and fallen—so the story goes—before Derek entrusted his far from steady feet to it. It is doubtful whether we improve much after the age of two, or indeed whether life is not a slow decline after that zenith of bonhommie, tidiness and amiable curiosity. These children had no fears. They all talked at once, they gave their names at the first request and asked ours back, and they all wanted to know the facts about whatever topic was under discussion; invigorating conversationalists. But they had no curiosity about their disposal; they accepted transfer from tiny slum rooms to these vast chambers as unquestioningly as they accepted their three meals a day, their cots at bed time, and their separation from their parents; and I suppose they would accept starvation and death with the same imperturbable air of withholding criticism. And out of doors they had what appeared to be the whole of Kew Gardens, set down at their door by djinns and afrits, to run about in. The psychologists have spoken their minds about psychic trauma in the earlier years, and it seems possible that adventures of the reverse kind may influence our growth: that a stirring or satisfying experience may get built into the fabric of the mind just as permanently as a disaster. If so, the splendour of the countryside seen from those terraced gardens will stand the children in good stead when their turn comes to live in a rebuilt London.

* * *

There are certain changes to be observed this Christmastide in and around this little Devon town. The first and most obvious is the increase in population. Quiet country lanes are no longer quiet and the voice of the cockney, mingling as in Whitechapel with the sibilant accents of the non-Aryan, is heard in the land. Farms and cottages, many of which were hitherto derelict or nearly so, are now crammed to overflowing and many a field that we have grown accustomed to seeing under grass has been tilled and sown. Here we are surrounded, as never before even in this prolific place, by expectant mothers, for it seems that the Little Man over the Water has hindered our output of babies even less than our output of armaments, and I for one had five confinements booked for Christmas week. By a stroke of luck they all came off pretty simultaneously before Christmas, and to the blasé general practitioner nothing is more exciting than hurrying from one midder case to another with a chloroform bottle concealed in his breast pocket and a pair of forceps at his hip.

Here also is a host of unaccompanied evacuated children all very cheerful despite periodic outbreaks of impetigo, prurigo and scabies. Some cases of scabies, by the way, having been intensively treated in hostels with benzyl benzoate and discharged as cured, have since responded well to good old ung. sulph. With some 90% of our child population immunised against diphtheria we may perhaps be forgiven for laughing at the so-called high figure of 40% quoted for another place in THE LANCET. If we are a fair sample of rural England in 1940—and there is no reason to suppose otherwise—it really begins to look as though the countryside may once more be coming into its own. To judge from the lively interest shown in country matters by these town-bred youngsters it is probable that some at least will decide to spend their lives on the land, and if the war brought no other good results it would then have accomplished something useful.

These are some of the changes to be counted on the credit side. But what of the debit ? It is hard to think of any. We are, perhaps, a little shocked at the market price of pheasants, a bird found on our tables often enough for us to get rather bored with eating it sometimes. Another bit of bad news is that the turkey annually presented by a quite needlessly grateful patient is not forthcoming this year; instead, we have received a couple of rabbits—facetiously known as "underground mutton" in contrast to pigeons which we call "overhead chicken." For me there was no hunting this Boxing Day. No matter; there are always too many people about and the fox is invariably headed. Sour grapes, you may say, but I deny it. Instead I went shooting in the hope of adding a snipe or two, and possibly a woodcock, to the larder. One thing, among many that remain unchanged, is that on Boxing Day every ferret in the country was at work as usual. This is the one day in the year that every farmer devotes to rabbiting.

* * *

If you want to see the countryside in luxury get a seat beside the driver of a large modern lorry. The one which goes into the nearest town for my medical supplies is so comfortable that more than once in the autumn I made three journeys instead of one. My seat was far more comfortable than any car; the driver was not allowed to go more than 30 miles an hour, which meant one was able to look at the countryside, without feeling it was necessary to assist in watching the road; and there was the feeling (quite unknown in any private car) that if you did collide with another vehicle the chances in favour of the other party coming off worst were considerable. The seat itself was made of rubber sponge, upholstered in green canvas; but best of all was the central heating. The heat came from a great square box which protruded from the floor between the two front seats; after ten minutes on the road the driver's quarters were as perfectly heated as a ballroom. Lastly, the huge plate-glass windows in the front and on the two sides of the lorry enabled one on a sunny day to get a free sunbath, though I suppose carpers will express doubts of its ultraviolet content.

* * *

The university students in Liverpool have taken in hand some tasks which reveal a lively imagination. Some time ago, they prepared part of the Students' Union as a rest centre for unfortunate people who have been bombed out of their homes. It is not their fault that as yet there has been no occasion for its use; but it is there, and when the time comes it will be ready. Another friendly gesture which they have made is to open their union to all Servicemen from other universities ("Pasts and Presents") who may be in the city. A recent guest said that he had previously been in three other university towns, and had had no contacts whatever with those universities or students; but here he was happy to be able to live again even for a few hours among old, familiar surroundings. The students—among whom the medicals are taking their full share in the project—have billed their invitation to open house in all the likely places of the town where Servicemen pass or congregate; the poster contains an item which has proved supremely popular—HOT BATHS.

Letters to the Editor

"THE PREVENTION OF DIABETES"

SIR,—Under this title Haist, Campbell and Best have recently published a paper in the *New England Journal of Medicine* (1940, **223**, 607) setting forth the reasons which, in their opinion, permit the hope that the development of diabetes mellitus may be prevented. The announcement of such a hope by distinguished workers cannot fail to attract the attention not only of those interested in the theory of carbohydrate metabolism but also of physicians in charge of diabetic patients. To clinical workers the article has even stronger claims to attention, for the authors make the conclusions from their experiments the basis of certain definite suggestions for the amelioration of established diabetes mellitus and for the prevention of the disease in predisposed subjects. Interest and clinical responsibility therefore combine to urge a careful examination of this paper.

The views expressed by the authors, and their suggestions for medical treatment, depend, not on evidence tested in the clinic but on their interpretation of a series of animal experiments. In the first series of experiments the authors give good reasons for believing that overwork of the pancreatic islet tissue may lead to a breakdown of its function of producing insulin. In a further series of experiments they attempt to determine on the one hand the factors which cause overwork of the islet tissue and on the other those which rest the tissue. From these experiments they draw the conclusion that high carbohydrate diets increase, whilst starvation, high fat diets and administration of insulin decrease the work of the pancreatic islet cells. On the basis of this conclusion they recommend the prophylactic administration of insulin and high fat diets to persons suspected of being potential diabetics and the prescription of fasting, high fat diets and insulin to patients with established diabetes.

It should be clearly realised that these conclusions and these recommendations are not based on direct proof but depend entirely on the authors' interpretation of their experiments. In my opinion the correctness of this interpretatıcn is open to grave doubt. I believe that far from indicating rest of the islet tissue the authors' data concerning the effects of starvation, high fat diets and excessive administration of insulin can be more easily interpreted to mean overstrain of that tissue; that the effects of high carbohydrate diets, regarded as due to overstrain of the islet cells, can be more appropriately interpreted as indicating that the work of these cells has been lightened. It is consequently my opinion that the application of the therapeutic measures recommended by the authors would, instead of resting the damaged pancreas, strain the damaged organ still further, thus tending to accelerate the deterioration of established diabetes and the development of the disease in predisposed subjects.

The justification for thus dogmatically stating my views is the necessity of warning physicians, now, that the application in clinical practice of the therapeutic measures recommended may be attended by danger to the patient. In fairness to the authors, however, the reasons for my views should be published, and with this object I have prepared a critical analysis of their work for the same journal in which their paper appeared.

University College Hospital, W.C.1. H. P. HIMSWORTH.

TRAUMA AND CANCER

SIR,—I am afraid that the relationship between trauma and cancer is not so easily disposed of as is suggested by your leading article of Dec. 21, at any rate if you include under the term cancer, the sarcomata. I admit that trauma as a cause of sarcoma is extremely rare, but I cannot persuade myself that the relationship does not exist.

About twenty years ago (I have not my notes with me) a boy of about fourteen at one of our large public schools was severely kicked on the shin while playing football. He had to leave the field and went into the sickroom for a day or two. This occurred during the Lent term and in the Easter holidays he was seen by his doctor uncle, an old friend of mine. The lump on his tibia still remained and was thought to be slightly smaller. The boy continued his activities through the summer term and the summer holidays, but the swelling on his tibia remained. In September the school doctor and the boy's uncle, in view of the continued swelling and some slight discomfort, began to discuss the possibility of tubercle. He was brought to me on the first day of the Christmas holidays on his way through London. By this time it was obvious that the swelling was a periosteal sarcoma on the subcutaneous surface of the lower third of the tibia. The boy, who was particularly intelligent, was quite certain that there had been no previous swelling of his tibia and that this swelling represented the original lump caused by the injury. Mr. Harrison Orton took an X-ray photograph of the limb which further strengthened the diagnosis, and on the next day I amputated through the middle of the thigh. Sir Bernard Spilsbury examined the growth and reported it to be an actively growing periosteal sarcoma. The radiogram showed very clearly delicate laminæ of new bone parallel to the axis of the limb, such as one finds in cases of periostitis, but through these were also seen the radiating spicules of bone at right angles to the axis of the bone which are so often found in periosteal sarcomata. Unfortunately the boy died less than a year after the operation with evidence of secondary growths in his skull and brain.

In my opinion, it would be difficult in this case to reject the trauma as the cause of the growth. The history as well as the radiological evidence of periostitis and new growth at the same site appear to me to render it inevitable. In a long experience of clinical surgery I have never been able to convince myself of a case of carcinoma being caused by injury, though I have seen many cases where such a history has been insisted upon, chiefly mammary cases and fractures due to secondary growths. In the latter class of case the primary growth was not always evident and was not always found unless a post-mortem examination was made. So far, therefore, as my personal experience goes, there appears to be very little evidence to prove that a carcinoma may result from a single trauma. But there does appear to be a certain amount of evidence that this may sometimes happen in the case of sarcomata of bone, and I would put forward this case as an instance. It is only fair to say that I have never seen another case exactly like it.

Harley Street, W.1. V. WARREN LOW.

FACING DISABILITY

SIR,—In your issue of Nov. 23 you deal with the case of a permanently disabled girl and state that "permanent disablement usually means, for an earner, a lifetime of physical and economic dependence," going on to remark that there is no provision for cases such as this. Existing provision is certainly inadequate and I agree that real rehabilitation should combine restored working capacity with the opportunity to earn. Facilities are available up to a point and are developing. You describe in your issue of Dec. 21 (p. 789) the opportunities at the St. Loyes' centre for cripples at Exeter, where disabled people are trained and then placed in employment as engineers, precision-instrument makers, watch and clock makers and repairers, machine draughtsmen, gardeners, clerks and cooks; and similar training with the addition of welding and spray painting is given at the Cripples College at Leatherhead. Men from these centres are holding down jobs on equal terms with the able-bodied: a spray painter with one arm amputated is employed at the dockyards, a man with a similar disability is a costing clerk, a machine draughtsman with a fractured spine goes to his work in a wheeled chair, and another patient with a fractured spine is a machine-tool maker. Examples can be multiplied. These training centres are now being enlarged and are officially included in the munitions training scheme of the Ministry of Labour, which is evidence that the trainees pull their weight and are not employed on philanthropic grounds. Papworth and Enham Village Settlements provide for cripples who need special conditions of work—a relatively small group. Most cripples can be enabled to take their place in the open labour market. They need curative rehabilitation (including occupational therapy), then expert guidance in choosing and obtaining work suited to their disability; in most cases a preliminary period of technical training is necessary. With these advantages, but not otherwise, the cripple is able to hold a job and the employer is willing to offer him one; and it is not segregation but normal

employment among his fellows which he should be helped to obtain. These facts are gradually being accepted by Government departments, insurance companies and others for whom the problem of disablement is a direct concern.

Exeter. GEORGIANA BULLER.

ANÆSTHESIA IN THE SHOCKED PATIENT

SIR,—Your leading article of Dec. 21 contained several statements on which I should like to comment from the standpoint of a general surgeon interested in local anæsthesia. You write with reference to the work of Clairmont and de Quervain that visitors "were uncomfortably aware that the success was not uniform." My experience is that local anæsthesia is more consistent than general anæsthesia, whose variability and post-operative morbidity compelled search for something more dependable, particularly for the bad risks and larger procedures. The addition of trickle doses of 0·5% Pentothal, 1 c.cm. at a time, induces sleep in the mentally unstable subjects and results in a successful method for patient and surgeon. Your statement that local anæsthesia lowers the blood-pressure is contrary to carefully taken records. In upper abdominal work there is a fall when splanchnic infiltration is made, but none when the "creeping" technique is used. The falls are never so great or prolonged as with general and spinal methods.

That "local anæsthesia has a technique which is not acquired overnight . . ." is true when applied to the actual operating, but the injection of the drug is now so standardised that it can be made by any house-surgeon or anæsthetist after instruction at half a dozen sessions. It is my practice to do upper abdominal operations first on the list. The infiltration and regional anæsthesia are done by the assistant 10–15 minutes before the arranged time, and the operations (mainly gastric and biliary procedures) have been carried out with the same satisfaction and ease as with a good spinal but without the after morbidity of the latter. "Moreover," you say, "regional anæsthesia presupposes apparatus which requires a team of trained attendants and at the present time all the paraphernalia of syringes and needles are hard to come by." Actually the outfit consists of one or two 3 or 5 c.cm. syringes, three needles (a no. 17 ⅝ in. long, a fine serum and a spinal no. 19 or 20). Does this merit the title of paraphernalia? Two convenient but optional additions are a two-way valve and a baby's feeding bottle (see *Brit. med. J.* 1940, **2**, 348). As already mentioned, the assistants can readily be trained, for the sites and amount of injection have been worked out with precision. In sharp contrast is the ever-growing complication and expense of the modern general anæsthetic apparatus, with its cylinders of oxygen, oxygen and CO_2, nitrous oxide, cyclopropane; bottles of ether and chloroform and ampoules Vinesthene.

"In emergency one anæsthetist can supervise two or three tables near him." Do you mean the present fashion of an air-way thrust down the patient's throat and the mask strapped to the face while the anæsthetist wanders in and out of the theatre? It is a method which hard experience made me reject. It is variable in its facilitation of the operation, and is often followed by several hours of vomiting, and by some degree of chestiness.

After graduating by painful stages through general and spinal to local anæsthesia, I find that with the last operations are practicable, the postoperative progress is uniformly smoother, the mortality is lower and the final results are better.

London, W.1. HAROLD DODD.

SIR,—Recent letters and your own editorial comment suggest the need for a reconsideration of the whole question of anæsthesia in the presence of traumatic shock by the light of all the evidence from bedside and laboratory. Mere expressions of opinion are inadequate; the time has come for a proper trial by trained teams of various anæsthetic methods in shocked cases. Silence on the subject of local anæsthesia in the War Memorandum on Wound Shock is a negative aspect of a widespread spirit of dogmatism whose positive prohibitions on burn-treatment are causing surprise and growing concern among men with long and relevant clinical experience.

Little opportunity, as you say, is offered for gaining knowledge of local anæsthesia at schools which produce "general" anæsthetists of high competence, but surgeons are at least half-way to acquiring the technique; for surgeons already have the close acquaintance with anatomy essential to the accurate placing of analgesic solutions, and only need sufficient patience to give these time to take their full effect.

Abdelsamie's practical, undogmatic paper on early amputation for severe crushing of limbs has been quoted where it draws attention to the harmful effect of unblocked stimuli in these "poor risks" (*Lancet*, 1936, **1**, 187). But all the emphasis in that paper is on early amputation. Abdelsamie certainly finds that for this procedure full Novocain analgesia is benign and does not shock the patient; his first object is, however, to remove —as soon as possible—dead or dying tissue which *does* shock the patient, and he and others rely most on novocain as adjuvant in that urgent business. The question now ripe for settlement is: Which of several adjuvants is best?

London. ARNOLD K. HENRY.

INFECTION IN AIR-RAID SHELTERS

SIR,—I have read with much interest the article in your issue of Dec. 21 by Dr. Andrewes and others, and must comment on the sections dealing with sodium hypochlorite and with spraying instruments. The authors say "we are therefore publishing this progress report of some of the work carried out at Hampstead," and these two sections detail facts which are either a narration of such research or a review of previous knowledge. Since they contain no item of novelty they can only be regarded as complete confirmation of the work of others. If, however, they are given as a review of previous knowledge it is surely in accordance with universal procedure in scientific research to acknowledge the source of such work. My own pioneer work (since 1925), confirmed and extended by Prof. Eyre, Prof. Hewlett and Dr. Spitta, has covered every point mentioned and copies of the reports have been in the hands of the National Institute staff for many months. The "Dynalysor" which was lent to the institute for research has been so faithfully copied that the description of the "simpler" model agrees in every particular with that of the dynalysor. No evidence is offered to show that it has any greater germicidal efficiency. Early in 1939 Dr. Pulvertaft and others gave in THE LANCET a review of air sterilisation and omitted any allusion to hypochlorites. I had to point out to them the advanced state which the application of hypochlorites to air sterilisation had reached. With their facilities for research, the staff of the institute may be expected to extend our knowledge on this subject in several important directions, but it is well that the line where present knowledge ends and future discoveries begin should be justly defined and acknowledged.

Ebury Street, S.W.1. A. T. MASTERMAN.

SIR,—Bacteria in dry dust are resistant to the bactericidal action of ultraviolet rays, probably because it is difficult for the rays to penetrate through this media. To investigate the bactericidal effect of ultraviolet rays I have employed a culture of *Streptococcus viridans* isolated from the nasopharynx and fauces of patients suffering from infective multiple arthritis. When this culture was sprayed into the air in a moist state the cocci were destroyed by the rays emitted by a "low pressure" quartz mercury-vapour lamp 60 in. long operated by a current of 3 5 amps and 210 volts A.C. or D.C. on main supply. This lamp has been designed as a "daylight" lamp, for, in addition, it has twenty 100-watt tungsten-filament lamps. The long ultraviolet rays have bactericidal action. Dry dust particles greatly inhibit the bactericidal action of these rays, but the addition of water vapour will restore their killing power and the rays will then sterilise an artificial air-borne infection with *Strep. viridans*. Such a lamp, correctly protected by a glass bowl or screen, can be used for illumination. The balance of luminous rays is such that coloured objects appear in their natural tone and a daylight effect is produced. If a dry dusty and infected atmosphere is moistened, the air can be sterilised by the long and short ultraviolet ray emitted by the lamp. The

further addition of a "light sensitisor"—i.e., eosin or rose Bengal in the extreme dilution of 1/200,000—will increase the bactericidal effect, since the photodynamic action will make the luminous rays effectively bactericidal. This may be the ideal method by which light can be utilised to destroy air-borne droplet infections.

The work of Andrewes and others has indicated the difficulties in using ultraviolet rays for this purpose. The cost of installation is indeed a serious handicap. But it must be realised that these lamps could be used for general illumination of works and factories, if correctly protected and controlled. The use of chemical sprays also entails expensive apparatus. The prolonged and constant use of weak chemical vapours may cause serious damage by corrosion, especially to electrical installations and equipment. Further, additional personnel are necessary for supervision and control of chemical sterilising sprays. Apart from initial cost, lamps emitting bactericidal ultraviolet rays would prove less expensive in operation and supervision and more reliable than other methods. They may be invaluable to industry during periods of epidemics and further research may indicate an economic method by which they can be employed to prevent air-borne infections in air-raid shelters.

Upper Wimpole Street, W. ALBERT EIDINOW.

TOO MUCH VENTILATION

SIR,—Sir Leonard Hill says that my views on adaptation to the British winter climate are Victorian, although the great Queen was herself an extreme ventilationist. My views really go back in sympathy to the badger, who spreads his bedding in the sun, when there is any sun. This may be instinctive sterilisation, but I think it is to dry it. The hare's views are orthodox, but the cunning ferret goes to earth. British birds put their heads under their wings and dogs and cats bury their noses in their fur to warm their night air. To quote from Anstey's *Vice Versa*: "'I'm sorry to inconvenience you, Dr. Grimstone,' he said, with the air of one used to having his way in these matters, 'but I positively must ask you either to allow me to have this window up or to change places with you. The night air, sir, at this time of the year is fatal, my doctor tells me, simply fatal to a man of my constitution.'" This doctor may have feared the British January miasma, but I always thought he meant catarrh.

My letter was a plea for relaxation of the excellent precepts of ventilation and open-air treatment for those uninured to them for a few weeks in January and February, especially in cold misty localities such as marshes and estuaries, where many old-fashioned barracks and hospitals seem to have been placed. It is because I think that the qualitative effect of almost icy water vapour may produce a dry catarrh comparable to the erythema of a first-degree burn that I urged the middle course in ventilation for these few weeks. I also make two suggestions to the bacteriologists: first, to keep experimental animals under conditions of complete exposure, with damp bedding, conditions which Sir Leonard Hill says have nothing to do with catarrh; second, that on this dry catarrh there soon comes auto-infection, as in burns, then possibly cross-infection, then a virus becomes grafted, after which it is only a matter of steady progress through strains of increasing virulence. I have thought that if the very earliest cases of acute catarrh could be given a protective coagulum—e.g., by tannic acid—they would not go on to infection, infected mucus and sneezing, and I therefore intend to try nebula acidi tannici 1%, which C. J. Hewlett & Son have prepared for me.

Rochester. A. J. COPELAND.

BOILS

SIR,—The final sentence of your leader of Dec. 14 (p. 751) is surely unfair to those who have in your own words used staphylococcus toxoid "in a more scientific spirit." Having in this spirit treated some hundreds of cases with staphylococcal lesions of various kinds I cannot agree that the choice of specific remedies need "be governed by fancy and results by fortune." I agree that one should begin with antiseptic and local remedies such as you describe, although I consider acriflavine the best "coloured antiseptic" for dealing with the staphylococcus. When it becomes evident that the infection cannot be eliminated by these methods the specific remedy likely to yield the highest degree of success is an autogenous vaccine to which has been added a graduated series of amounts of toxoid. Changes due to the war have made it impossible for me to follow up accurately the cases that formed the material for a paper on the subject published five years ago (*Lancet*, 1935, **1**, 303) but I have seen enough of them and been closely enough in touch with the doctors who sent them to me to know that there has hardly been a relapse in those cases who were effectively treated. In no other type of treatment is greater care needed in assessing results than in vaccine therapy but I do not hesitate to recommend, in furunculosis not associated with another abnormal condition, an autogenous vaccine in a series incorporating a total amount of about 2·5 c.cm. of staphylococcus toxoid. Lack of care in selecting cases and incomplete dosage may lead to the doubts which you say dermatologists still have.

Richmond, Surrey. D. STARK MURRAY.

DIPHTHERIA IN SMALL HOSPITALS

SIR,—In the numerous discussions that have been taking place about diphtheria no-one seems to have mentioned the anomalous position of the smaller fever hospitals to which many of these cases are sent; hospitals with no resident doctor where the matron and nursing staff are in sole charge of the greater part of the patients' treatment. It would be interesting to know how many diphtheria patients die from myocardial complications and lack of immediate tracheotomy or intubation in these hospitals when they might otherwise have been saved. It is doubtless to save expense that this state of affairs is allowed, and yet even in as small a town as this we have our child-guidance clinic.

Keighley. WRIGHT LAMBERT.

HAZLITT ON DYING

SIR,—Reading Professor Ryle's most interesting, helpful and comforting article in your issue of Sept. 28, entitled Of Death and Dying, I was reminded of William Hazlitt's sage reflections on the same subject in his "Table Talk":

> Perhaps the best cure for the fear of death is to reflect that life has a beginning as well as an end. There was a time when we were not; this gives us no concern—why then should it trouble us that a time will come when we shall cease to be? I have no wish to have been alive a hundred years ago, or in the reign of Queen Anne: why should I regret and lay it so much to heart that I shall not be alive a hundred years hence, in the reign of I can not tell whom? . . . To die is only to be as we were before we were born; yet no one feels any remorse, or regret, or repugnance, in contemplating this last idea. . . . It seems to have been holiday-time with us then: we were not called to appear upon the stage of life, to wear robes or tatters, to laugh or cry, be hooted or applauded; we had lain perdus all this while snug, out of harm's way; and had slept out our thousands of centuries without wanting to be waked up; at peace and free from care, in a long nonage, in a sleep deeper and calmer than that of infancy, wrapped in the softest and finest dust. And the worst that we dread is, after a short, fretful, feverish being, after vain hopes and idle fears, to sink to final repose again, and forget the troubled dream of life.

Kingston, Ontario, Nov. 29, 1940. C. M. CRAWFORD.

SAFEGUARDING SLEEP

SIR,—It has been known to many since the last war that they can learn to sleep even amidst shattering noise. Partly for this reason it is to be hoped the Government may still provide deep shelters, since the maximum sense of security means the maximum amount of sleep. Notwithstanding allegations made in some quarters that the barbiturates are productive of death from susceptibility or from suicide, or on the other hand of addiction, I have seen no reason to change the views expressed some years ago in your pages (*Lancet*, 1934, **1**, 344). I have come across no case of death from a pharmaceutical dose, either a single dose or repeated at reasonable intervals, no case of suicide in which it was a cause and not simply a means, and only one case of addiction. I should advocate their being used to prevent accumulation of loss of sleep—to be taken say every second night if the previous night has been excessively disturbed and the second one

promises to be so also. I have in mind that although addiction is so rare in peace-time in this country we do not know how long the present strain may continue, and it would therefore be well to teach the public to use these as things to fall back on rather than to be habitually relied on. This does not mean that they should not be given for a week or two at a time, or much longer if need be, in special circumstances. In particular, recent war experience has taught the value of a barbiturate for several nights after some terrifying experience has been endured, at any rate for those who appear to have been particularly disturbed by it.

Torquay. R. D. GILLESPIE.

DRY DRESSINGS

SIR,—Mr. J. G. Bonnin's letter on dry dressing in THE LANCET of Oct. 26 (p. 532) recalls my experience early in the South African war. One day I attended some bullet wounds that had been dressed without the application of the usual two pieces of jaconette, and all of these had scabbed over and healed promptly. The other wounds in which the perspiration had been imprisoned by the waterproof material had a stinking dressing, were sodden and took many days to heal. I brought this to the knowledge of Army headquarters and within a week a general order was issued forbidding the use of the jaconette. I believe that the first field-dressing in the last war contained the jaconette, and I suppose the one in use now is similar. What a waste of material.

Tangier. F. J. W. PORTER.

THINGS TO COME

SIR,—I have been much interested in the letters of Mr. Alec Bourne and Dr. E. E. Claxton, particularly in Dr. Claxton's observations on change in personality. It would be very helpful to those who are working towards a new world order to know how change of personality both in the individual and in the mass can be brought about.

Swansea. ARTHUR J. AMOR.

PORPHYRY OR PORPHYRINURIA?

SIR,—There is one point in which I think your leader of Nov. 23 is wrong—in calling this disease porphrinuria. As I mentioned in my paper in the same issue porphyrins can be found anywhere in the body, and at autopsy one finds this substance in the bones. So why call it porphyrin-uria? Actually I once saw a case of acute encephalitis with porphyrin in the C.S.F.

Highgate. LEO RAU.

MEDICINE AND THE LAW

Compensation for Workman's Disfigurement

DOES it affect a milk roundsman's value as a salesman if he loses an ear? Will the customers be less likely to buy milk from him? And, if so, what is the effect of the accident for the purposes of workmen's compensation?

The milkman in question received full compensation until a certain date when his employers took him back into their service in a different post and at a lower rate of pay. The compensation payments then came down to 5*s*. a week. Last June he joined the Army and asked for a declaration of liability. He gave evidence that one of the company's managers had said he did not think the customers would care for his disfigurement. There was no other evidence on the subject. The arbitrator, who saw the milkman, rejected the statement attributed to the manager and refused the declaration of liability. In the Court of Appeal the Master of the Rolls said the arbitrator was wrong. There had been some evidence about the effect of the disfigurement; it was uncontradicted; the arbitrator had no right to rely on his own observation in place of the evidence before him. Incapacity due to physical disfigurement, said the Court of Appeal, if it does not in fact stop a man from doing his actual work, is just like any physical disablement which impedes him in the actual physical execution of his work. The same considerations are material. The declaration of liability was granted.

Public Health

Treatment of Venereal Disease by General Practitioners

Facilities for the treatment of venereal disease are required within easy reach of the large colonies of people now in rural areas. The Minister of Health has considered the provision of mobile units and improvised treatment centres, and has now decided (Circular 2226), after discussion with the British Medical Association, to enlist the help of general practitioners. He suggests the following arrangements for the consideration of local authorities.

The council would invite all practitioners in the areas selected to apply, and from among those willing to serve who had, or who obtained, the necessary qualifications would appoint the number required. Doctors would have to provide evidence that they had, in the presence of the medical officer in charge of a venereal diseases treatment centre, performed the following operations: spread microscope slides with discharge from 12 patients (including 6 females) for examination for gonococci; scraped 3 lesions suspected of being early syphilitic and collected the juice made to ooze from them in 12 capillary tubes; taken 6 specimens of blood; given 12 intravenous injections of neoarsphenamine or of Stabilarsan and 12 intramuscular or deep subcutaneous injections of bismuth compound. Practitioners who in the opinion of the medical officer of health and the V.D. specialist officer are qualified by past training to perform the above operations may be appointed without being required to undergo the formal tests. Doctors who wished to qualify for service would be given training facilities at any treatment centre, and those appointed would be supplied by the local authority, free of charge, with all necessary drugs, syringes, needles and outfits for taking laboratory specimens. They would be required to keep simple records and to return them to the V.D. specialist officer. Model forms for the purpose appear in the circular. Fees would be 10*s*. 6*d*. for the initial attendance for diagnosis and treatment, and 7*s*. 6*d*. for every subsequent attendance or home visit; a transport allowance of 3*d*. a mile each way for every mile in excess of two would be granted.

It is suggested that any council which has not already got a specialist V.D. officer on its staff should appoint one, probably on a part-time basis. This officer would supervise the treatment service, record-keeping, the treatment given and the attendances made by patients. He would be available as a consultant to practitioners serving under the scheme, and they would be expected to inform him of any complicated case, or of any case where they found it necessary to visit the patient at home, so that he could keep in touch with such cases from the outset.

During the war the expense of such services would rank for grant from the Exchequer. The Minister believes that a specialist V.D. officer would be of great help to each council in reviewing the needs of the area and suggesting plans to meet them.

From the Annual Reports

IT is unfortunate that the war necessitated curtailments of the annual reports for 1939, for in that year the health of the nation reached a level never before attained, and as it was almost free from serious epidemics or other sensational interferences with health, medical officers would have commented less on the causes of diseases than of those of health. It is true that the records are preserved in the health offices and when the war is over we may expect comprehensive reports with appropriate commentaries, but post-dated comments cannot fail to be coloured by after-events. We shall have to take 1938 as the standard health year for comparison with the war period. That year was indeed the healthiest up to its date, but it lacked the s nsational low records of 1939, the explanations of which, if we could find them, would be of great help in developing a health policy. In theory, all death and disease due to causes extraneous to the body itself are preventable, but in practice prevention falls far short of its theoretical possibility, so the year in which we got nearest to it deserves the most searching scrutiny.

Brief as they are, some of the reports for 1939 reveal matters which give us much food for speculation.

EASTBOURNE

The report for Eastbourne is presented by Dr. John Felton, who succeeded Dr. Willoughby when he retired in May, 1939, after serving Eastbourne for over a generation. The population unit of Eastbourne and its social and positional amenities naturally give it an exceptionally good health record, so far as the matters which mainly concern medical officers of health are concerned; we have to inquire whether it is as good as it should be, or could be made, in the circumstances. The population is 56,400 and in 1939 the birth-rate was 11·18, compared with the England and Wales rate of 15, and the crude death-rate 12·76, which falls on correction to 10, compared with 12·1 for the whole country.

On the surface, therefore, both the birth-rate and the death-rate appear to be exceptionally low. There is no official way of correcting the birth-rate, but the true fertility-rate, which is the important matter, can be cast on the number of females aged 15–45 when this is known. Where this is not available it is impossible to say what relation exists between the recorded birth-rate and the fertility-rate. For the death-rate the Registrar General supplies each district with a comparability factor by which the crude death-rate is multiplied, so as to make it what it would have been if the age and sex distribution were similar to that of the whole country. The correction is only for age and sex and takes no account of the many social factors which influence mortality. Comparison of corrected death-rates brings out these factors, but does not tell us what they are. For instance, the low corrected death-rate of Eastbourne tells us that the mortality of the unit is low, but does not help us to decide whether this is due to the health of the place or to an exceptionally favourable population. Since Eastbourne is a favourite place of retirement for the well-to-do, its population is certainly well placed for longevity, for those who retire to end their days in Eastbourne will in general have done well in their active days and continued good health is an important factor in prosperity. Of the 759 persons who died in Eastbourne in 1939 only 26 were between the ages of 1 and 25 years; a similar number were under 1 year; 205 were aged 25–65, and 502 over 65 years of age. The number of births was 543, not much more than two-thirds of the number of deaths. This tells us the unit would rapidly become extinct if it were not kept up by immigration of people above the reproductive age.

The infantile mortality was 39, which is not exceptionally low for 1939. Infectious diseases were low, and apart from tuberculosis caused but 2 deaths, both from whooping-cough, which disease became epidemic in the last quarter. Of the 56 cases of diphtheria, none of which was fatal, 40 occurred in the last quarter. Eastbourne was a reception area in the early days of the war, so the comparatively high prevalence of diphtheria and whooping-cough may be connected with the influx of evacuees. Owing to the low child density of Eastbourne in normal times this influx may have upset epidemic balance more than it did in most reception areas.

TODMORDEN

Dr. P. Henderson's report for the borough of Todmorden is of usual length and illustrated with four coloured graphs. This is unexpected, for in the present clash of mighty powers such a small borough might have been dismissed with a few paragraphs. But the story Dr. Henderson has to tell is of national importance in showing the trend of our population. Todmorden is in the West Riding of Yorkshire near the border and belongs to a group of small towns and urban districts to which the cotton industry, in the days when it was flourishing, flowed from Lancashire. It was incorporated in 1896 when its population was 25,000 and it increased in population and prosperity up to the start of the last war, when its population reached 26,100. During the war its numbers shrank to 20,900, rose in the post-war boom to 24,200 in 1921 and since then have dwindled almost continuously to their present level which Dr. Henderson estimates to be 20,000, though the Registrar-General's estimate is 20,750. This works out at less than 2 persons per acre. In December, 1938, the number of unemployed was 1520 which by the end of 1939 had been reduced to 537. Its birth-rate, which in 1896 was 24·5, fell to the extremely low level of 9·73 in 1939. In 1888 when the population was 23,255 there were 664 births and 461 deaths. In 1939, when the population was 20,750, only 202 persons were born and 325 died. The death-rate in that year was 15·7 crude, 14·91 corrected. Obviously there has been emigration of young adults.

If the vital statistics of Todmorden are compared with those of Eastbourne, the difference in the health of a population which is ageing from emigration of the young from one which is ageing from immigration of the old is presented in a striking manner. Roughly the old people remain in Todmorden because they are too poor or feeble to move; they go to Eastbourne because they are able to go there. Both towns will have low birth-rates because the populations are overweighted by people beyond reproductive age, and both, for the same reason, will have high crude death-rates; but in Todmorden the corrected death-rate is high (14·91), in Eastbourne it is low (10). There were no maternal deaths in Todmorden in 1939 and the infantile mortality scored the remarkably low level of 10, though the stillbirth-rate at 51·6 per 1000 total births was high. The tuberculosis mortalities were 0·24 per 1000 population for both respiratory and non-respiratory divisions, giving a total tuberculosis mortality of 0·48, which is very low and gives further evidence of emigration of young persons, for Todmorden would not naturally have a low tuberculosis rate. In 1939 there were only 5 notifications of respiratory tuberculosis, all males over thirty-five years of age, but 14 notifications of other forms. On the register at the end of 1939 there were 42 respiratory and 114 non-respiratory cases. It is noteworthy that all 5 deaths from non-respiratory tuberculosis in 1939 were due to meningitis.

Infectious Disease in England and Wales

DURING THE WEEK ENDED NOV. 30, 1940

Notifications.—The following cases of infectious disease were notified during the week: smallpox, 0; scarlet fever, 1634; whooping-cough, 2369; diphtheria, 1435; enteric fever, 33; measles (excluding rubella), 14,486; pneumonia (primary or influenzal), 675; puerperal pyrexia, 112; cerebrospinal fever, 151; poliomyelitis, 22; polio-encephalitis, 1; encephalitis lethargica, 4; dysentery, 109; ophthalmia neonatorum, 74. No case of cholera, plague or typhus fever was notified during the week.

Deaths.—In 126 great towns there was no death from smallpox, enteric fever, or scarlet fever, 11 (0) from whooping-cough, 14 (0) from measles, 39 (3) from diphtheria, 32 (5) from diarrhœa and enteritis under 2 years, and 26 (5) from influenza. The figures in parentheses are those for London itself.

Greater London reported 1 death from enteric fever. Birmingham had 6 deaths from whooping-cough. There were 7 fatal cases of diphtheria at Liverpool and 4 at Birkenhead. Liverpool also reported 4 fatal cases of measles.

The number of stillbirths notified during the week was 178 (corresponding to a rate of 40 per thousand total births), including 8 in London.

INDIAN MEDICAL SERVICE.—In view of the expansion of the Indian Army the Government of India wish to recruit a considerable number of doctors in the United Kingdom for service as emergency commissioned officers in the Indian Medical Service for the duration of the war. The conditions of service of these officers have recently been revised and the Government of India are now prepared to accept doctors up to 45 years of age for war service if they are considered suitable and physically fit for service in tropical countries. Emergency commissioned officers of the Indian Medical Service will be eligible for acting and temporary promotion above the rank of lieutenant appropriate to the duties which they are called upon to discharge in the same way as officers of the R.A.M.C. Officers appointed to specialist posts will thus be eligible for acting rank appropriate to their duties. Pay will be at the same rates as for officers of the Indian Medical Service in peace-time, and passages to India at Government expense will be provided for officers, but not for their families. Candidates will be required to attend at the India Office for interview and medical examination before being finally accepted for appointment. Further information may be had from the medical adviser, India Office, S.W.1.

Parliament

WHOLEMEAL AND FORTIFIED BREAD

AFTER announcing in the House of Lords on Dec. 19th a new subsidy to bakers equal to ½d. per quartern loaf, designed to keep the price of bread down to 8d. a quartern, Lord WOOLTON, Minister of Food, made a statement on his department's policy in regard to wholemeal flour. He had decided to adopt an 85% extraction as a basis for wholemeal flour, which would be supplied at the same price as "national straight-run" white flour. This would contain the necessary quantities of vitamin B_1, which scientific authority considered to be essential if the best value was to be obtained out of bread. He had been impressed by the unanimity of scientific opinion on the nutritive value of wholemeal bread and also by the obvious desire of people who were not scientists to compel everybody to eat wholemeal bread. The virtues of wholemeal bread were by no means a discovery of the war; they had been widely known for some time, and certain trade interests had spent vast sums in advertising the nutritive value of wholemeal bread to the public, who had had ample opportunity of testing it and expressing their opinion. The returns obtained by the Ministry of Food from all flour millers in the country showed that the average delivery of all kinds of high-extraction flour —i.e., "wholemeal," including proprietary flours—did not exceed 5% of the total delivery of all flour. Reckoning that about 60% of the total flour output was used for bread making, it followed that the total quantity of bread made from high-extraction flour was only a little over 8% of the bread consumed in the country. The scientific subcommittee appointed to advise the Government on its food policy carefully sifted the facts. Brown bread did not keep as well as white bread, and was less attractive as a food when it was stale. Further—and this was very important in war-time when they must maintain reserve stocks of flour—high-extraction flour did not keep as well as straight-run white flour, and it would have to be turned over in store twice as often as white flour if it was not to go out of condition. In these circumstances, he was loth to insist on the public having no choice but to eat wholemeal bread. He considered that the proper attitude for the Ministry of Food was to secure that such bread was available in adequate supply to the public at the same price as white bread, and at the same time to draw the attention of the public to the advantages which the scientific committee assured him that those who ate this bread were likely to obtain; at the same time recognising that there were classes of people in the country to whom, for physiological reasons, such bread was not suitable. He was afraid that this decision would disappoint those people who were anxious that he should adopt a more dictatorial attitude, but he was sure that the advocates of wholemeal bread would not abate their efforts to persuade the public to adopt this form of diet; and those doctors who had so insistently urged the importance of compulsion would doubtless be able to convince their professional colleagues of the wisdom of pressing its merits on their patients.

Turning to the question of fortifying white bread, Lord Woolton said that for four years before the war the flour-milling industry had spent a great deal of money on research as to the best means of remedying the recognised deficiency of white flour in vitamin B_1. Guided by their scientific advisers, they had made arrangements to secure the production of vitamin B_1 synthetically, and had found a means of introducing it into white flour without affecting the appearance of the flour, or its baking or keeping qualities. The Government had considered a report of its own scientific subcommittee on this matter and had decided to ask him to secure that white flour should be fortified with synthetic vitamin B_1, and concurrently to ensure that sufficient supplies of wholemeal bread were available to the public. To convert scientific discovery that had been put into practice on a laboratory scale into an enterprise sufficiently large to meet commercial demands was a long process, and supplies of synthetic vitamin B_1 would not be available in quantity until May 1941. The scientific advisory committee had also drawn the attention of the Government to the importance of adding certain calcium salts to flour that was deficient in this element.

The M.R.C.'s View

Lord BALFOUR OF BURLEIGH, chairman of the Medical Research Council, said that the council had given this question of bread close attention since the early days of the war, and had decided to recommend that bread should be made of an extraction of the wheat grain of not less than 80–85% in order that the bread should contain the germ of the wheat grain, as much as possible of the aleurone layer, and the finer portions of the bran. A further recommendation was made which Lord Balfour quoted in full because, he said, he had some difficulty in following its meaning.

"A small quantity of calcium salt should be added to this flour in order to overcome a defect of bread, especially of bread made from a higher extraction flour, of preventing the utilisation of calcium by the body."

The addition of calcium, he explained, would increase what was known as the calcium retention. The addition of calcium to brown bread allowed better bone and tooth formation, a quality in which the British people were deficient. Calcium deficiency had long been a defect of nutrition among our people. This was evident in the widespread defective formation of teeth and the need that was generally recognised of giving codliver oil and other sources of vitamin D to children in order to increase calcium retention in the body. This was vitally important to the poorer sections of the community, because it was among them that the deficiency of calcium had especially to be overcome, owing to the difficulty they experienced in obtaining the protective foods—milk, cheese, and vegetables. The Medical Research Council, while thinking that everybody ought to eat wholemeal bread, recognise the practical difficulties and no one desired to see a dictatorial attitude adopted. He was delighted to hear that Lord Woolton would continue his advocacy of that bread. The addition of vitamin B_1 to the 70% extraction flour was also a very desirable step which the Medical Research Council would cordially approve, though they did not think that even with the addition of calcium and vitamin B_1 the 70% extraction flour would be good as the 85%. In fact, the "off-white" colour of the resultant loaf might produce an even higher degree of popular prejudice against it than against a really brown loaf.

Lord WOOLTON assured Lord Balfour that his efforts would be unabated in advising the public of the results of this scientific research. It was quite clear that the more high-extraction flour was used the less would be the demand on our shipping space for wheat, and it might become a part of national policy to press hard for the consumption of this form of bread purely from that point of view.

Obituary

FRANK GRÉGOIRE PROUDFOOT

M.A. ST. AND. AND OXFD, M.D. EDIN.

THE death of Dr. F. G. Proudfoot on Dec. 20 at the age of 81 deprives Oxford of a rich personality, a man of attainments with innumerable friends. Born at St. Andrews, the son of Peter Proudfoot, a former president of the Educational Institute of Scotland, Frank Grégoire Proudfoot had French as well as Scottish blood in his ancestry. He was educated at the universities of St. Andrews, Edinburgh and Oxford and soon after graduating M.B. at Edinburgh in 1894 came to the Radcliffe Infirmary, where he was to spend the greater part of his professional career and become the first honorary obstetric physician. Before the last war he was already acting as medical officer to the Queen's Own Oxfordshire Hussars and for the first part of the war he continued to serve in this capacity and was wounded in 1915 in the second battle of Ypres. Later he commanded an ambulance train in France and was afterwards put in charge of the military hospital at Brighton. Immediately after the war he held the posts of officer commanding the 3rd Southern General Hospital, and A.D.M.S. of the 48th division, T.A., with the rank of colonel. He was appointed an honorary surgeon to the King in 1929.

For many years Proudfoot dealt single-handed with a practice built up by himself, yet his life was full of other interests. He approached his masonic activities with a

zeal which never flagged. He played a great deal of golf and was a member of the Royal and Ancient where his handicap in his golfing heyday was scratch. Of his zest for his hobbies a friend writes: he brought his St. Andrews swing with him to Oxford and it was a pleasure to watch him play golf; his full wooden shots through the green were delivered with a controlled abandon which a gradual increase in his figure did little to impair. He was a charming partner and a generous opponent. He was also a keen and skilful bridge player, though with his cheery temperament there was perhaps a little of a St. Andrews swing in his calling too. He thoroughly enjoyed, as a man should, a good dinner and was a judge of port; he told a story well and was a delightful host and an appreciative guest. Genial and kindly, he had the happy faculty of showing and obviously feeling real pleasure in even a chance encounter with those he knew.

Dr. Proudfoot married Alice Babington who survives him with one son.

ANDREW TRIMBLE

M.B., R.U.I., D.P.H., J.P.

Dr. Andrew Trimble died in Belfast on Dec. 15 at the age of 73. He was the son of Mr. W. J. Trimble of Dungannon and graduated M.B. at the old Royal University of Ireland in 1895 after a successful career in Queen's College, Belfast. In 1910 he obtained his D.P.H. He was a member of the Belfast corporation from 1908 until 1912 while in general practice in the city, and was associated with the late Dr. Henry O'Neill in many public-health reforms. In 1913 he became the first municipal tuberculosis officer in Belfast, where his talent for organisation found ample scope and he was rewarded by a decreasing death-rate. He retired in 1939. He often contributed to the discussions of the British Medical Association and of the Ulster Medical Society and he was for several years chairman of the Belfast centre of the Royal College of Nursing.

Andrew Trimble was a real enthusiast in the fight against tuberculosis, and visited Canada, the United States and the Scandinavian countries to widen his knowledge and study new methods. He was Sir William Whitla's successor as president of the Y.M.C.A. in Belfast, and attained high rank in the masonic order. He was a fluent speaker and was keenly interested not only in sociological problems but in English literature. A friend has said of him that "his mind was a portrait gallery of the writers and poets whose thoughts inspired him with the loveliness that imbued his own life." He married Margaret, daughter of Mr. William Gowans, who survives him.

CAMILLE BARRÈRE

ALL those concerned with the international aspects of public health will learn with regret of the death in Paris on Oct. 7 of Camille Barrère, ambassador of France, member of the Institute, and delegate for France of the permanent committee of the International Office of Public Health. It was at his inspiration and with his active support while ambassador at Rome that the convention founding the International Public Health Office was drawn up in 1907. He had been led early in his diplomatic career to take an interest in international hygiene and had presided at four international conferences concerned with the Danube, Egypt and the Suez Canal. He early realised the importance of protecting commercial interests and preventing the spread of epidemics by a rational and uniform system of quarantine control throughout the world. Though he never intervened in technical discussions, his advice and support were invaluable in questions concerning the organisation and diplomatic status of the International Office. In spite of advanced age and failing health his interest in its work did not abate nor his charm and courtesy to even the most junior delegate. To have known him was to realise why, of all French titles, that of Ambassadeur de France commanded the highest respect. One can only wish that he had been spared from seeing the end—as he saw the beginning—of the Third Republic.

In a recent Army casualty list Lieutenant R. E. Horton, M.B. Lond., R.A.M.C., is included among the wounded.

Medical News

University of Cambridge

At recent examinations the following were successful:

FINAL M.B. EXAMINATION

Part II: physic, pathology and pharmacology.—W. W. Brigden, W. R. Burkitt, O. Clarke, R. E. W. Comerford, J. G. Craddock, G. E. H. Enderby, M. A. Fawkes, J. S. Hesketh, A. Holmes-Smith, D. J. Howell, D. M. Jackson, F. S. Jackson, D. W. M. James, E. J. C. Kendall, D. Laing, L. A. Little, I. B. Mackay, W. B. D. Maile, A. Maples, P. F. Milling, R. Morton, A. G. E. Pearse, F. T. G. Prunty, L. Read, M. Redfern Davies, T. W. Rowntree, W. M. Scott, R. M. Stevenson, C. S. N. Swan, D. E. Thompson, R. C. Tufton, D. N. White, F. A. Whitlock, J. O. D. Williams and F. J. Y. Wood.

University of Bristol

At recent examinations the following were successful:

FINAL EXAMINATION FOR DEGREES OF M.B., CH.B.

N. F. W. Brueton, Gwendolen M. Higgins, Megan E. Jones, J. M. Joshua, J. K. Lewis, T. E. Lloyd, Henry Mullen, P. W. J. Searle, R. D. R. Shanks.

In group I (completing examination).—G. H. Harvey, J. W. J. Newton, D. A. Squire.

In group II (completing examination).—Winifred M. Curgenven-Robinson, Clara J. Fraser, Ruth M. Hunter.

Surgeon Rear-Admiral C. V. Griffiths has been appointed an honorary physician to the King in succession to Surgeon Rear-Admiral Thomas Creaser, who has retired.

The Physical Society has awarded the seventeenth Duddell medal to Prof. E. O. Lawrence, Nobel laureate, for his invention and development of the cyclotron.

Dr. Robert D. Defries has been appointed director of the School of Hygiene and the Connaught Laboratories of the University of Toronto. Since 1925 he has been associated in the work of these institutes with the late Dr. J. G. Fitz-Gerald whom he now succeeds.

The postponed meeting of the section of therapeutics of the Royal Society of Medicine will be held on Tuesday, Jan. 14, at 2.30 P.M. Dr. H. J. Parish and Dr. I. H. Maclean will open a discussion on active immunisation—some present-day problems. At 2.15 P.M. on Thursday, Jan. 16, at the section of dermatology Prof. P. A. Buxton will read a paper on recent work on the louse. Dr. Henry MacCormac and Dr. A. M. H. Gray will afterwards speak on the prevention and treatment of parasitic diseases.

Births, Marriages and Deaths

BIRTHS

FLANNERY.—On Dec. 17, at Douglas, I.o.M., the wife of Surgeon Lieut.-Commander A. E. Flannery, R.N.—a daughter.

KNOX.—On Dec. 21, at Broadmoor, Crowthorne, Berks, the wife of Dr. John Stuart Knox—a son and daughter.

PEPPER.—On Dec. 23, at Gartocharn, Dumbartonshire, the wife of Surgeon Lieutenant Richard Pepper, R.N.V.R.—a daughter.

TAYLOR.—On Dec. 30, to Dr. Charity Taylor, wife of Dr. Stephen Taylor—a son.

WALTON.—On Dec. 25, at Tidworth, Hampshire, the wife of Major H. C. M. Walton, R.A.M.C.—a son.

WINCKWORTH.—On Dec. 24, at Taunton, the wife of Mr. Richard Winckworth, F.R.C.S.—a son.

MARRIAGES

BABINGTON—HOWDEN.—On Dec. 24, at Reading, Gilbert Cleary Babington, M.D., Major R.A.M.C., to Margaret Russell Howden.

BARRY—CRAIG.—On Dec. 28, in London, Claude Barry, M.D., to Monica Craig, M.B.

CURTIN—BARKER.—On Dec. 28, at Walton-on-Thames, Augustine Peter Curtin, M.R.C.S., Surgeon Lieutenant R.N.V.R., Fleet Air Arm, to Margaret Raymond Barker.

SAMPSON—HARRIS.—On Dec. 20, at Ruislip, Charles Anthony Sampson, M.R.C.S., Surgeon Lieutenant R.N.V.R., to Margaret Ann Harris.

DEATHS

COWIE.—On Dec. 24, at Glenrinnes, Dufftown, Alexander Mitchell Cowie, M.B. Aberd., D.L. for the county of Banffshire.

HALL.—On Dec. 27, at Sheffield, John Stratford Hall, M.B., B.Hy. Durh., aged 70.

LINTOTT.—In December, Gordon Alan Macdona Lintott, M.D. Lond., M.R.C.P., Major R.A.M.C.

ROBERTSON.—On Dec. 26, at Palace Road, S.W.2, James Robertson, M.B. Lond.

SCOTT.—On Dec. 23, at Hove, William Whitlaw Scott, L.R.C.P.I., aged 80.

SHEPARD.—On Dec. 24, at Cookham Dean, Robert Henry Shepard, M.R.C.S., aged 74.

SPONG.—In December, William Arthur Spong, M.B. Dubl., L.M., Lieut.-Colonel R.A.M.C., of Sutton Benger, Wilts, aged 57.

NEW YEAR HONOURS

THE honours list issued on Jan. 1 contains the following names of members of the medical profession :—

BARONET

HUGH LETT, C.B.E., M.B.
President of the Royal College of Surgeons of England.

K.C.M.G.

GODFREY MARTIN HUGGINS, F.R.C.S.
Prime Minister of S. Rhodesia since 1933. On the occasion of the jubilee celebrations of the colony.

K.C.I.E.

Major-General ERNEST WILLIAM CHARLES BRADFIELD, C.I.E., O.B.E., M.S. Lond., I.M.S.
Medical adviser to the Secretary of State for India, and lately director-general, Indian Medical Service.

KNIGHTS BACHELOR

Colonel CONSTANTINE TRENT CHAMPION DE CRESPIGNY, D.S.O., V.D., M.D. Melb., F.R.C.P.
For public services in Australia.

Brevet Colonel RAM NATH CHOPRA, C.I.E., M.D. Camb., F.R.C.P., I.M.S. (retd).
Professor of pharmacology and director, School of Tropical Medicine, Calcutta.

JOHN HARRY HEBB, C.B., C.B.E., M.B. Oxfd.
Director-General, Emergency Medical Services, Ministry of Health.

C.B. (Military Division)

Major-General ROBERT WALTER DICKSON LESLIE, O.B.E., L.R.C.P.I., late R.A.M.C.
Hon. physician to the King.

Major-General JOHN WALTER LENNOX SCOTT, D.S.O., M.R.C.S., late R.A.M.C.
Hon. physician to the King.

Temporary Surgeon Rear-Admiral CECIL PEMBREY GREY WAKELEY, D.Sc. Lond., F.R.C.S., F.A.C.S., F.R.A.C.S.
Consulting surgeon to the Royal Navy and senior surgeon to King's College Hospital.

C.S.I.

Major-General HUGH CLIVE BUCKLEY, F.R.C.S.E., K.H.P., I.M.S.
Lately surgeon-general with the Government of Bombay.

C.M.G.

JOSEPH WELSH PARK HARKNESS, O.B.E., M.B. Glasg., D.P.H.
Colonial Medical Service, D.M.S. Gold Coast.

ROBERT THOMSON LEIPER, M.D. Glasg., F.R.C.P., F.R.S.
Professor of helminthology in the University of London and a director of the department of parasitology, London School of Hygiene and Tropical Medicine.

ERIC DENHOLM PRIDIE, D.S.O., O.B.E., M.B. Lond.
Director of the Sudan Medical Service.

ARCHIBALD GUELPH HOLDSWORTH SMART, M.B.E., M.D. Edin., D.P.H.
Asst. medical adviser to the Secretary of State for the Colonies.

BERNARD TRAUGOTT ZWAR, M.D., M.S. Melb., F.R.A.C.S.
President, Royal Melbourne Hospital, Victoria. For public services.

C.I.E.

Lieut.-Colonel DAVID CLYDE, M.D. Glasg., D.P.H., I.M.S.
Civil surgeon, Lucknow, United Provinces.

Lieut.-Colonel WALTER HUGH CRICHTON, M.B. Edin., I.M.S.
Chief health officer, Delhi.

Lieut.-Colonel HENRY HAWES ELLIOT, M.B.E., M.C., M.B. Durh., I.M.S.
Surgeon to the Viceroy.

Lieut.-Colonel HENRY EDWARD SHORT, M.B. Aberd., I.M.S.
Director, King Institute, Guindy, Madras.

C.V.O.

EDMUND CLAUD MALDEN, M.B. Camb.
Surgeon apothecary to H.M. Household at Windsor.

C.B.E. (Military)

Surgeon Captain ROBERT FRANCIS PRESTON CORY, M.R.C.S., R.N.

Colonel FRANCIS ROSSALL SANDFORD, M.C., M.B. Camb., late R.A.M.C.

C.B.E. (Civil)

Lady RUTH BALFOUR, M.B. Lond.
Chairman, Women's Voluntary Services for Civil Defence in Scotland.

THOMAS HERBERT GODDARD, M.B. Sydney.
For devoted service to public and philanthropic movements in Tasmania.

ARTHUR HUTTON MCSHINE, O.B.E., M.D.
For public services in Trinidad.

Mrs. RUTH YOUNG, M.B.E., M.B. St. And.
Women's Medical Service, lately principal, Lady Hardinge Medical College, Delhi.

M.V.O. (Fourth Class)

GEORGE PROCTOR MIDDLETON, M.B. Aberd.
Surgeon apothecary to H.M. Household at Balmoral.

O.B.E. (Military)

Major REGINALD ANSON MANSELL, M.B.E., M.B. Camb., R.A.M.C.

Surgeon Commander ALFRED WILLIAM NORTH, L.M.S.S.A., R.N.

Surgeon Commander ARNOLD ASHWORTH POMFRET, M.B. Manc., D.O.M.S., R.N.

O.B.E. (Civil)

Mrs. KATIE ARDILL-BRICE, M.B. Sydney.
For philanthropic and welfare work in New South Wales.

Colonel JAMES HAMILTON CAMPBELL, D.S.O., M.B., R.V.I., R.A.M.C. (retd).
Air-raid precautions controller, Kent.

ROBERT WILLIAM CRAIG, M.D. Edin.
Secretary, British Medical Association, Scottish branch. For services in connexion with civil defence.

Flying-Officer CLYDE CORNWALL FENTON, M.B. Melb., R.A.A.F.
Lately medical officer, Northern Territory Medical Service, Commonwealth of Australia.

Lieut.-Colonel SIDNEY NUTALL HAYES, F.R.C.S., F.R.C.O.G., I.M.S.
Professor of midwifery, King Edward Medical College, Lahore, and medical superintendent, Lady Willingdon Hospital, Lahore.

GEORGE KINNEARD, M.D. Manitoba.
Colonial Medical Service, senior medical officer, Falkland Islands.

Lieut.-Colonel GOPAL DAS MALHOUTRA, M.B. Punjab, F.R.F.P.S., I.M.S.
Civil surgeon, Moradabad, United Provinces.

SULTAN BAKHSH MALIK, M.R.C.S.
For public services in the Tanganyika Territory.

SHAMRAO RAMRAO MOOLGAVKAR, F.R.C.S.
Professor of surgery, Grant Medical College, and honorary surgeon, J. J. Hospital, Bombay.

ARTHUR AUBREY PALMER, M.B. Edin., F.R.C.S.
For public services in New South Wales.

JOSEPH FRANCIS ENGLEDUE PRIDEAUX, M.R.C.S.
Director of medical services, Ministry of Pensions.

JOHN WIGHTMAN STIRLING, M.B. Edin., J.P.
Principal medical officer, Bechuanaland Protectorate.

Major MOORE TAYLOR, M.D. Aberd., I.M.S.
Superintendent, European Mental Hospital, Kanke, Ranchi, Bihar.

M.B.E. (Civil)

FRED BARRETTO, L.M.S. Bombay, D.P.H.
Assistant director of public health in charge of the Public Health Laboratory, Poona, Bombay.

Miss MARIE MARGUERITE COTE.
Retired medical practitioner, Thandaung, Toungoo District, Burma.

Mrs. DOSSIBAI JEHANGIR RATANSHAW DADABHOY, M.D. Lond.
Hon. consulting surgeon, Cama and Albless Hospitals, Bombay.

Hon. Captain Rai Bahadur NAGENDRA NATH DUTT, M.D. Lond.
Medical practitioner, Calcutta, Bengal.

CHARLES NORMAN GRIFFIN, M.D.
Colonial Medical Service, district medical officer, St. Kitts, Leeward Islands.

Assistant Surgeon WILLIAM ST. ALBAN HENDRICKS, L.M.S.
Civil surgeon, Gangtok, Sikkim.

Miss URSULA MARIE LOBO.
Women's Medical Service, junior branch, Shegaon, Buldana District, Central Provinces and Berar.

ANTONIO JOSE NORONHA, M.D.
Lecturer in bacteriology and pathology, B. J. Medical School, Poona, Bombay.

WILFRID REGINALD TAYLOR, M.R.C.S., D.P.H.
Assistant medical officer for Grimsby. For services in connexion with civil defence.

RAGHUNATH SABAJIRAO TIRODKAR, M.D. Lond.
Professor of medicine, Grant Medical College, and hon. physician, J. J. Hospital, Bombay.

M.C.

Flight-Lieutenant KEVIN CORMACK DONOVAN, M.B. Sydney, R.A.F.V.R.

A.F.C.

Wing-Commander HUGH WOLFE CORNER, M.D. Aberd., R.A.F.

KAISAR-I-HIND GOLD MEDAL

ROBERT GREENHILL COCHRANE, M.D. Glasg.
Medical superintendent, Lady Willingdon Leper Settlement, Chingleput, Madras.

Miss REBA CUTHBERT HUNSBERGER, M.D.
Lady doctor-in-charge, Memorial Hospital for Women and Children, Sialkot City, Punjab.

Lieut.-Colonel JOSEPH LOCKHART DOWNES YULE, M.B. Aberd., I.M.S.
Lately officer commanding, Indian Military Hospital, Delhi Cantonments.

BAR TO KAISAR-I-HIND GOLD MEDAL

Mrs. OLIVE MONAHAN.
Chief medical officer (retd), Kalyani Hospital, Madras.

Notes, Comments and Abstracts

ACCENT ON SAFETY

THE common casualties of industry are due to accidents while handling goods, to falls, falling material, sepsis, failure to use protective equipment, and misuse of hand tools. The Ministry of Labour is setting out to put workers on guard against these dangers. In the foreword to a new pamphlet,[1] Mr. Ernest Bevin remarks that accidents in factories are a bonus to the enemy. He estimates that if we can prevent even 1% of the accidents now occurring loss of production will be avoided; but no-one regards the injured person solely as a producer, and the fact that avoidable accidents still occur is to our discredit. The success of the scheme, Mr. Bevin considers, rests with the management of the firms. The Ministry of Labour is providing a service to all industries and firms must plan to make the best use of it. Each factory will receive free of cost a copy of the pamphlet, four posters a month, a copy of the *Industrial Safety Bulletin*, which has appeared monthly for the past eight years, and sample copies of four short pamphlets suitable for distribution to workers. The posters are designed to keep the idea of safety in the forefront of the worker's mind and to make him wary. The management of each factory is urged to focus the responsibility for safety measures in one man and to set up a works safety committee which will keep in close touch with him. A lecture training course is to be arranged for these safety-organisers, who will be whole or part time, depending on the size of the factory. The safety committee is the essential link between the management and the workers, and even in a small works a committee of three can be formed, consisting of manager, foreman and a worker.

The Ministry is working with the help of the National Safety First Association which can supply forms suitable for recording accidents. Records are important because accidents tend to repeat themselves, and not only those which happen but those which nearly happen should be investigated. As a defence against sepsis firms are advised to provide adequate first-aid posts and to arrange for redressings. A pamphlet called "Blood Poisoning," among those recommended for distribution, has been written by a doctor on the principle that men obey rules better when they understand the reasons for them. Posters and leaflets will have less effect on workers than the direct influence of works safety committee members, trade-union representatives, departmental managers and foremen; and this can be reinforced by shop meetings, films and special exhibitions.

COLOURED PROPAGANDA

A suitable film on the first-aid treatment of industrial injuries was completed just before the war by Messrs. T. J. Smith and Nephew. The film is in colour and shows first a minor accident—cut fingers—occurring in a small factory without an ambulance room, and treated in the manner prescribed by the Home Office; a more serious accident occurring in the same factory—a case of electric shock—is also given first-aid treatment. The second section of the film shows a case of fractured femur occurring in a colliery provided with an ambulance room above and below ground but no whole-time medical officer. Fully organised factory first-aid is shown in two sections; minor and major injuries occur and are treated in an ambulance room where ample equipment and the service of a medical and whole-time nursing staff are available. A series of cases treated in a normal day include old injuries coming in for daily dressings. There is a final less topical section dealing with first-aid in a South African gold mine; minor wounds and injuries are treated at the dressing station of the compound, and more serious casualties in hospital; annual first-aid competitions are shown and African first-aiders are seen in action. The factory sections were produced under the direction of Dr. Donald Stewart, the mines section under Dr. S. W. Fisher, medical officer to the Ministry of Mines, and the synopsis and captions have been approved by Dr. J. C. Bridge of the Home Office. The makers are arranging a limited number of projections of the film during the coming months to be given free of charge to the medical and first-aid staffs of large industrial works. Applications should be sent with a choice of dates to the medical department Messrs. T. J. Smith and Nephew Ltd., Neptune Street, Hull.

1. Works Safety in War-Time. Produced by the National Safety First Association, Terminal House, 52 Grosvenor Gardens, London, S.W.1.

MEDICAL DIRECTORY.—The labour involved in revising the Medical Directory, always imposing, must this year have been positively awesome, what with the scattering of the profession and delays in the post. Fortunately for the publishers the whereabouts of most of us these days are so ephemeral as hardly to be worth mentioning in an annual directory. For this reason the 1941 edition, now ready (J. and A. Churchill, 42*s*.), is not the historical document it might have been. Surgeon Commander X, R.N.V.R., Major Y, R.A.M.C. (T) and Squadron Leader Z, R.A.F.V.R. appear as simple Mr. X, Dr. Y and Dr. Z, with only a hint of their present more romantic tasks buried among their peace-time appointments in the text. The Services section has even fallen from 3307 in 1940 to 3241; London remains much the same at 9543 compared with 9628; and the Provinces have only risen from 26,729 to 27,624. In Scotland, for some reason, the number of doctors continues to rise rapidly, and from being 5883 in 1938 the total is now 6613.

WHO'S WHO for 1941 (Adam and Charles Black, 65*s*.) has had to face the same difficulties and has also had to keep pace with the effects of war in throwing new personalities into prominence. The publishers' claim that "to rely on an out-of-date edition is dangerous" is more than ever justified.

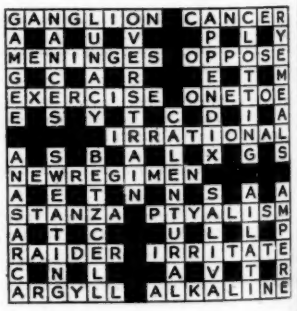
BRITISH DRUG HOUSES, Ltd., tell us that they have now introduced the apparatus for transfusions and infusions described in THE LANCET of Nov. 9, 1940 (p. 591) under the name of Vena-flask.

The King has given permission to Dr. Robert Brown to wear the insignia of the third class of the Order of the Nile which has been conferred on him by the King of Egypt in recognition of his services as professor of anæsthesia in the faculty of medicine at Cairo.

CORRIGENDUM.—In his report on the health of Iceland for 1938 Dr. Vilmundur Jónsson stated that in 1882 some 1700 people died on the island from measles. This did not represent nearly a quarter of the population (as stated in THE LANCET of Nov. 30, p. 704) but was a death-rate of 24 per 1000.

Mrs. Sheldon of 38, Queen's Court, Bayswater, asks us to deny that a Dr. Thornton has lived at that address within the last two years. We regret any inconvenience she may have suffered.

THE LANCET CROSSWORD: LAST WEEK'S SOLUTION



Appointments

HENNESSY, J. A., M.B. Edin.: temp. asst. M.O. at Salop Mental Hospital, Shrewsbury.

LAWSON, BARNEY, M.R.C.S., D.A.: R.S.O. at the Guest Hospital, Dudley.

MEACHIM, G. L., M.B. Manc.: examining surgeon under the Factories Act, 1937, for Matlock, Derby.

RIGG, D. R., M.B. Sheff.: deputy medical superintendent at Warwick Hospital.

SOMERVILLE, PETER, M.B. Glasg.: asst. M.O. at Oakwood Hall Sanatorium.

THISTLETHWAITE, ELEANOR C., M.B. St. And.: temp. asst. M.O. for St. Pancras.